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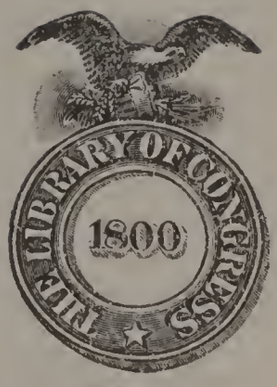
LABORATORY MANUAL
OF
PHARMACY

FASER

1923



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LABORATORY MANUAL
OF
PHARMACY

FOR
STUDENTS AND PHARMACISTS

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By
HENRY M. FASER

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PREFACE

In this manual the attempt is made to give the outline of work followed by the author with his classes for several years. Every preparation in the book should be made by the student and the greater part, if not all, of the prescriptions should be compounded. The book is to be used in connection with the United States Pharmacopoeia and the National Formulary; it is in no wise intended to take the place of these in the laboratory. The pharmacist should be as familiar with these two books as the minister should be with the Bible.

It is hardly possible to give an outline of all work that should be given in the laboratory. I have been guided by my experience and judgment in what I have included. Naturally, in many instances, there would be differences of judgment as to the importance of matter excluded or included. Much instruction must be given and laboratory work carried on that could not well be indicated in a text-book.

HENRY MINOR FASER.

University of Mississippi.

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CONTENTS

LABORATORY MANUAL OF PHARMACY

Weights, Measures, Specific Gravity, Specific Volume.

The systems of weights used in the United States are metric, troy, apothecary, wine, and avoirdupois.

Metric System.

The Metric System originated in France in 1790. It is the system of weights and measures used in the United States Pharmacopoeia and National Formulary.

The standard unit taken for the metric system is the **meter,** the forty-millionth part of the earth's circumference around the poles. The unit of capacity is the **liter**; it is the cube of one-tenth part of a meter. The weight of distilled water at its maximum density that will exactly fill the cube of one-hundredth part of a meter is taken as the unit of weight; this is called the **gramme.**

The multiples of these units are in Greek and the division is in Latin.

Linear Measure

10 millimeters	=	1 centimeter
10 centimeters	=	1 decimeter
10 decimeters	=	1 Meter
10 Meters	=	1 Dekameter
10 Dekameters	=	1 Hectometer
10 Hectometers	=	1 Kilometer
10 Kilometers	=	1 Myriameter

Volume Measure

10 milliliters	=	1 centiliter
10 centiliters	=	1 deciliter
10 deciliters	=	1 Liter
10 Liters	=	1 Dekaliter
10 Dekaliters	=	1 Hectoliter
10 Hectoliters	=	1 Kiloliter
10 Kiloliters	=	1 Myrialiter

Weight Measure

10 milligrams	=	1 centigram
10 centigrams	=	1 decigram
10 decigrams	=	1 Gram
10 Grams	=	1 Dekagram
10 Dekagrams	=	1 Hectogram
10 Hectograms	=	1 Kilogram
10 Kilograms	=	1 Myriagram

The milliliter is more often called cubic centimeter.

Matters to be remembered in converting metric into ordinary weights and measures and **vice versa.**

15.432 grains equals one gramme
1 grain equals 65 milligrams
39.37 inches equal one meter
1 inch equals 25 millimeters
33.8 fluid ounces equals 1 liter (1000 Cc)
1 fluid ounce equals 29.5 mils or Cc
1 fluid dram equals 3.7 mils or Cc
16 minims equals 1 mil or Cc

The above is not exact, but accurate enough for all practical purposes.

Linear Measure—Divide the number of millimeters by 25, 300, or 900; the quotient will be the answer in inches, feet, or yards, respectively.

Volume Measure—Divide the number of mils by 0.061, 3.7, or 29.5; the quotient will be the answer in minims, fluid drams, or fluid ounces, respectively.

Weight Measure—Divide the number of grammes by 0.065, 3.9, 31.10, or 28.35; the quotient will be the answer in grains, drams, apothecaries ounces, or avoirdupois ounces, respectively.

Apothecary Weight

20 grains	=	1 scruple (℈)
3 scruples	=	1 dram (ʒ)
8 drams	=	1 ounce (℥) 480 grains
12 ounces	=	1 pound (℔) 5760 grains

The Apothecary weights are used only in writing and compounding prescriptions.

Apothecary or Wine Measure

60 minims (min)	=	1 fluid dram (fl ʒ)
8 fluid drams	=	1 fluid ounce (fl ℥)
16 fluid ounces	=	1 pint (O)
2 pints	=	1 quart (qt)
4 quarts	=	1 gallon (Cong.)

The Apothecary or Wine Measure is used in making preparations or filling prescriptions for liquids.

Avoirdupois Weight

437.5 grains	=	1 ounce (oz)
16 ounces	=	1 pound (#)

The Avoirdupois Weight is used for designating the weight of all commodities except gems and precious metals. All drugs are bought and sold by this system.

Troy Weight

24 grains	=	1 pennyweight (dwt)
20 pennyweight	=	1 ounce (Troy oz)
12 ounces	=	1 pound (Troy lb)

Troy Weight is mentioned because it is often confused with Apothecaries weight. It is used in weighing gold, silver, and other precious metals and does not concern the pharmacist.

Imperial Measure

60 minims	=	1 fluid dram
8 fluid drams	=	1 fluid ounce
20 fluid ounces	=	1 pint
8 pints	=	1 gallon

The Imperial Measure is used in Great Britain only. It differs from our Wine Measure in that none of the units are of the same value as the Apothecary Wine Measure of the United States. This fact should be kept in mind in compounding prescriptions from Great Britain.

1 Imperial minim	=	.96 minims (U. S.)
1 Imperial fluid dram	=	.96 fluid drams (U. S.)
1 Imperial fluid ounce	=	.96 fluid ounces (U. S.)
1 Imperial pint	=	1.2 pints (U. S.)
1 Imperial gallon	=	1.2 gallons (U. S.)

It will be noted that the minim, fluid dram, and fluid ounce are smaller than these units of the Apothecary Wine Measure, and that the pint and gallon are larger.

Ounces of Different Value

The pharmacist has three ounces of different value to contend with.

Apothecary ounce	=	480 grains
Avoirdupois ounce	=	437.5 grains

The weight of one fluid ounce of distilled water, approximately, 455. grains.

It must be remembered that we buy our drugs by the Avoirdupois system and that we compound them by the Apothecary system. When we buy one ounce of Quinine Sulphate, we get 437.5 grains. When we dispense this Quinine Sulphate in prescriptions we use 480 grains.

Per-cent solutions are based on the weight of water. For example: In making one fluid ounce of 10 per cent solution of cocaine, we would use 10 per cent of 455 and not 10 per cent of 437.5 or 480.

Approximate Measures

1 Teaspoonful is considered equivalent to one fluid dram.
1 Dessertspoonful is considered equivalent to two fluid drams.
1 Tablespoonful is considered equivalent to one-half fluid ounce.
1 Wineglassful is considered equivalent to two fluid ounces.
1 Teacupful is considered equivalent to four fluid ounces.
1 Tumblerful is considered equivalent to eight fluid ounces.

At the present time teaspoons are made larger than formerly and only six teaspoonfuls can be obtained from one fluid ounce mixture. For accuracy graduated medicine glasses should be used instead of spoons.

A minim is usually considered to be one drop, but it varies in size according to the liquid and the mouth or lip of container from which it is being dropped.

Aqueous liquids a drop is usually one minim.

Alcoholic liquids a drop is usually one-half minim.

Specific Gravity

Specific Gravity is the weight of one body compared with the weight of an equal bulk or volume of another body selected as the standard, both bodies having the same temperature.

The temperature selected by the U. S. P. is 25 degrees C. or 77 degrees F.

Specific Gravity is obtained by dividing the weight of the substance by the weight of an equal volume of water.

Example: A flask weighs 40 grams; when filled with water it weighs 64 grams, and filled with glycerine it weighs 70 grams. What is the specific gravity of the gylcerine?

Subtracting the weight of the bottle, we have 24 grams as the weight of the water, and 30 grams as the weight of the glycerine

30 divided by 24 equals 1.25, the specific gravity of the glycerine.

It is seldom necessary for the pharmacist to take the specific gravity of solids.

Solids heavier than water are weighed in the ordinary way in air; then they are suspended in water by means of a silk thread or hair and weighed. The difference in weight is the weight of the water displaced, and is equal in volume to the volume of the solid. The ordinary weight divided by the loss of weight in water gives the specific gravity.

Example: A piece of iron weighs 48 grams in air; suspended in water it weighs 42 grams; what is the specific gravity?

48 — 42 = 6, the weight of water displaced, or loss of weight in water. 48 ÷ 6 = 8, the specific gravity of the iron.

If the solid is lighter than water, it must be attached to some solid that is heavier, in order to make the suspension possible, and the calculations made accordingly.

If the solid is soluble in water it is necessary to use some liquid in which it is not soluble. In such a liquid, use the method above described of taking specific gravity in water. The specific gravity thus obtained multiplied by the specific gravity of the liquid used will give the specific gravity of the substance, taking water as the standard.

Specific Gravities

The Pharmacist should have in mind the specific gravity of the common liquids used.

Water has the specific gravity of	1.00
Glycerine	1.25
Alcohol	.816
Chloroform	1.478
Ether	.716
Sulphuric Acid	1.83
Nitric Acid	1.40
Hydrochloric Acid	1.16
Mercury	13.50

Specific Volume

Specific Volume of a substance is the inverse of its specific gravity. It is the volume of one body compared with the volume of an equal weight of another body selected as the standard. For solids and liquids water is taken as the standard.

To take the specific volume, divide the volume of the substance by the volume of an equal weight of water. Or, divide the unit 1.00 by the specific gravity.

Examples: 100 grains of glycerine measure 84 minims. 100 grains of water measure 105 minims. What is the specific volume of the glycerine? 84 ÷ 105 = 0.8, specific volume of the glycerine.

The specific gravity of glycerine is 1.25 what is the specific volume. 1.00 ÷ 1.25 = 0.8, specific volume of glycerine.

To determine the specific volume of a liquid, turn to the U. S. P., find the specific gravity, and divide the unit 1 by the specific gravity.

Volume to Weight and Weight to Volume

Many of the common liquids, such as glycerine, sulphuric acid, nitric acid, hydrocloric acid, ether, chloroform, etc., are bought by weight and sold by volume. Formulas frequently call for weight when it would be more convenient to measure the liquid.

The pharmacist must be able to transcribe weight into volume and volume into weight.

Examples:

1. What is the weight of one fluid ounce of Glycerine, specific gravity 1.25? A fluid ounce of water weighs 455 grains. Glycerine is 1.25 times as heavy as water. $455 \times 1.25 = 568.75$ grains.

2. What is the weight of one fluid ounce of Ether, specific gravity .720? $455 \times .720 = 328$ grains.

3. How many fluid ounces in 100 Avoirdupois ounces of Glycerine? One Avoirdupois ounce of water measures .96 fluid ounces, then 100 Avoirdupois ounces of water would measure 96.00 fluid ounces. $96.00 \times 100 = 9600.00 \div 1.25$, the specific gravity of the Glycerine, equals 76.8 fluid ounces of Glycerine; or we may multiply by the specific volume instead of dividing by the specific gravity. $100 \times 96. \times 0.8 = 76.8$.

4. A certain formula calls for 50.00 Gm. of Glycerine, how many cubic centimeters would you use? $50.00 \div 1.25 = 40$ Cc.

Rule. Weight in grams divided by specific gravity equals volume in cubic centimeters.

5. Chloroform has the specific gravity of 1.50. We mean (since a pound and a pint of water are considered the same) that a pint of Chloroform weighs approximately one and one-half pounds.

In short, specific gravity deals with what weight of a certain substance will go into a certain container. Specific volume asks what size container will hold a certain weight of the substance.

1. Soap Solution.

Recipe.

Powdered Soap	15 Gm.
Alcohol of each	60 Cc.
Water, sufficient to make	360 Cc.

Dissolve the soap in hot water. When cool add the ammonia water and alcohol. Put in your bottle and use for cleaning.

Cleaning Powder.

Recipe.

Powdered Pumice Stone Oxalic Acid of each	5. Gm.

Rub together well and use for polishing spatulas, etc.

2. Balance, Weights, Graduates, etc.

Uses and care of Balance, Weights, Graduates and other apparatus.

3. Specific Gravity.

Use a one-ounce prescription bottle for liquids.

Take the Specific Gravity of Chloroform

Take the Specific Gravity of Glycerine.

Take the Specific Gravity of Alcohol.

Take the Specific Gravity of your 10 Gm. brass weight.

4. Specific Volume is obtained by dividing 1 by the specific gravity of the liquid.

Weigh 20 Gm. of Chloroform in your 30 Cc. graduate. Note the volume in Cc.

Apply the rule by dividing the weight by the S. G., and see if correct.

5. Dropping: Use 1 ounce prescription vial half filled with liquid.

1. Count number of drops of Water in 1 Cc_____
2. Count number of drops of Chloroform in 1 Cc_____
3. Count number of drops of Alcohol in 1 Cc_____
4. Count number of drops of Tincture of Opium in 1 Cc___

Look in U. S. P., for dose of Chloroform and Tincture of Opium.

6. Heat. Management of Heat.

Burner, regulation of flame.

Media, wire gauze for simple protection to flasks, etc.

Sand-bath, used for double protection.

Water-bath, restricting the temperature to 100°C.

Oil-bath, temperature 200° to 250°C.

7. Vessels for heating.

Test tubes—Beakers—Chemical Flasks—Evaporating Dishes —Casseroles. Uses and care of each.

8. Meaurement of Heat.

In pharmaceutical operations the Thermometer is used for measuring heat. Two scales are in use in this country, the Centigrade and the Fahrenheit.

Centigrade Thermometer,—Freezing point of water is 0° and the boiling point is 100°.

Fahrenheit Thermometer.—Freezing point of water is 32° and the boiling point of water is 212°.

9. Evaporation.

Evaporation is resorted to for the purpose of separating a volatile substance from a less volatile substance, the residue left being the object sought. The residue wanted may be a liquid, semi-liquid, or solid.

Evaporating Dishes, (Explain)
Evaporation over direct flame
Evaporation on Sand-bath
Evaporation on Water bath
Evaporation, Spontaneous
Evaporation in Vacuum Apparatus
Evaporation to given weight
Evaporation to given volume

10. Desiccation.

Desiccation is the process of depriving vegetable drugs of their moisture. A desiccator is a closed vessel containing some substance that has a strong affinity for water, such as calcium chloride, sulphuric acid, lime, etc.

11. Exsiccation.

Exsiccation is the process of depriving a solid crystalline substance of its water of crystallization by the application of heat.

ALUMEN EXSICCATUM, U. S. P.

Exsiccated Alum

Take 10 Gm. of alum and exsiccate by the formula as given in the U. S. P.

Calculate the percentage of Exsiccated Alum obtained

Synonym: Dried Alum, Burnt Alum.

12. Distillation.

Distillation is the process of vaporizing a liquid and condensing the vapor back into a liquid. It may be done for the purpose of purifying a liquid or for the purpose of recovering it.

Simple distillation from flask with glass tubing.

Distillation with Liebig Condenser.

13. Sublimation.

Sublimation is the process of vaporizing a volatile solid and condensing the vapor back into a solid.

Sublime 5 Gm. of Benzoin as directed.

Sublime 2 Gm. of Camphor as directed.

14. Crystallization.

Crystallization is the process by which solid substances are caused to assume a definite geometric form called crystals. Those substances which do not crystallize are termed amorphous (without form).

The main object of crystallization is to increase the purity of chemicals.

FERRI SULPHAS, U. S. P.

Ferrous Sulphate

Iron Filings	15 Gm.
Sulphuric Acid	14 Cc.
Water, a sufficient quantity.	

Put 75 Cc. of water in large evaporating dish and add the acid very slowly, with stirring. Add the iron, stirring frequently. When effervescence has nearly ceased boil the mixture for about five minutes. See that the mixture is acid to litmus.

Filter and set away to crystallize.

15. Granulation.

Granulation is the process of heating chemical substances with constant stirring until moisture is evaporated and a granular powder is obtained.

FERRI SULPHAS GRANULATUS, U. S. P.

Granulated Ferrous Sulphate

Make 20 Gm.

16. Calcination.

Calcination is the process of heating inorganic compounds to a high heat so that the volatile constituents are driven off.

Magnesium Carbonate_____ 5 Gm.

Heat in a tared capsule on a sand bath until it ceases to lose weight.

The residue left is Magnesium Oxide. Calculate the percentage of MgO yielded by Magnesium Carbonate.

17. Precipitation.

Precipitation is the process of throwing substances out of solution and causing them to assume an insoluble form.

Precipitation may be produced in various ways,—

(a) Change of temperature may cause precipitation. Cold reduces the solubility of most substances and a hot super-saturated solution on cooling will precipitate.

(b) Some substances are more soluble in cold water than in hot and will be precipitated on heating. Heating Lime Water will precipitate the lime.

(c) Change of menstruum may cause precipitation. Water added to an alcoholic solution of some resinous drug. Or, alcohol added to an aqueous solution of some gum.

(d) Chemical change causes the precipitation by the formation of new insoluble compounds. This is the most important phase of precipitation.

HYDRARGYRUM AMMONIATUM, U. S. P.

Ammoniated Mercury

Corrosive Mercuric Chloride	10 Gm.
Ammonia Water	-
Distilled Water, each, a sufficient quantity.	

Dissolve the Corrosive Mercuric Chloride in 200 Cc. of warm Distilled Water, filter the solution, and allow it to cool. Pour the filtered liquid gradually, and with constant stirring, into 15 Cc. of Ammonia Water, taking care that the latter shall remain in slight excess. Collect the precipitate on a filter, and, when the liquid has drained from it as much as possible, wash it with a mixture of 40 Cc. of Distilled Water and 2 Cc. of Ammonia Water. Finally, dry the precipitate between sheets of bibulous paper, in a dark place, at a temperature not exceeding 30°C, and keep it in well stoppered bottles, protected from light.

$$HgCl_2 + 2NH_4OH = NH_2HgCl + NH_4Cl + 2H_2O.$$

Synonym,—White Precipitate.

Uses,—Externally only in form of Ointment.

Preparation—Unguentum Hydrargyri Ammoniati, U. S. P.

HYDRARGYRI IODIDUM RUBRUM, U. S. P.

Red Mercuric Iodide

Corrosive Mercuric Chloride	4 Gm.
Potassium Iodide	5 Gm.
Distilled Water, a sufficient quantity.	

Dissolve the Corrosive Mercuric Chloride and the Potassium Iodide, each, in 80 Cc. of Distilled Water, and filter the solutions separately. Pour both solutions, simultaneously and in a thin stream, with constant and very active stirring, into 200 Cc. of Distilled Water. When the precipitate has subsided, decant the supernatant liquid, collect the precipitate on a filter, and wash it with cold Distilled Water, until the washings give not more than a slight opalescence with a silver nitrate test solution. Finally, dry it in a dark place, between sheets of bibulous paper, at a temperature not exceeding 40°C, and keep it in well stoppered bottles, protected from light.

$$HgCl_2 + 2KI = HgI_2 + 2KCl$$

Why does the formula state to pour the solutions of Mercuric Chloride and Potassium Iodide, simultaneously and in a thin stream into the Water? If either of the two solutions be in excess, the precipitate will be dissolved.

Synonyms,—Biniodide of Mercury, Mercuric Iodide, Red Iodide of Mercury.

Uses,—As an alterative, especially in cases of syphilis.

Preparations: Liquor Arseni et Hydrargyri Iodidi, U. S. P. Liquor Hydrargyri et Potassii Iodidi, U. S. P.

HYDRARGYRI OXIDUM FLAVUM, U. S. P.

Yellow Mercuric Oxide

Corrosive Mercuric Chloride	10 Gm.
Sodium Hydroxide	4 Gm.
Distilled Water, a sufficient quantity.	

Dissolve the Corrosive Mercuric Chloride in 100 Cc. of warm Distilled Water, and filter the solution. Dissolve the Sodium Hydroxide (which should contain at least 90 per cent. of pure, anhydrous sodium hydroxide) in 100 Cc. of cold Distilled Water, and into this solution pour gradually, and with constant stirring, the solution of Corrosive Mercuric Chloride. Allow the mixture to stand for an hour at a temperature of about 30°C, stirring frequently. Then decant the supernatant, clear liquid from the precipitate, and wash the latter repeatedly by the addition and decantation of portions of Distilled Water, using 100 Cc. of water each time. Collect the precipitate on a strainer, and continue washing with warm Distilled Water, until a small portion of the washings, when poured on a little mercuric chloride test solution, no longer produces a yellowish turbidity at the line of contact of the two liquids. Then allow the precipitate to drain, and dry it between sheets of bibulous paper, in a dark place, at a temperature not exceeding 30°C, and keep it in well stoppered bottles, protected from light.

$$HgCl_2 + 2NaOH = HgO + 2NaCl + H_2O.$$

Uses,—Externally in form of Ointment and Oleate.

Preparations—Ungentum Hydrargyri Oxidi Flava, U. S. P. Oleatum Hydrargyri, U. S. P.

MAGNESII CARBONAS, U. S. P.

Magnesium Carbonate

Magnesium Sulphate	25.00 Gm.
Sodium Carbonate	30.00 Gm.
Distilled Water, a sufficient quantity.	

Dissolve the Magnesium Sulphate and Sodium Carbonate separately, each in 200 Cc. of cold Distilled Water, mix the solutions and boil the mixture for fifteen minutes; transfer the precipitate to filter and wash it with successive portions of boiling Distilled Water until the washings are free from sulphates. Test with Barium Chloride test solution.

Dry the precipitate at a temperature not exceeding 100°C.

$$MgSO_4 + Na_2CO_3 = MgCO_3 + Na_2SO_4$$

Uses: Antacid, large doses cathartic.

18. Powders.

Powders usually consist of two or more substances intimately mixed in a finely divided condition. Single agents are also dispensed in the form of powders.

Seven powders are recognized in the U. S. P., and fourteen in the N. F.

PULVIS AROMATICUS, U. S. P.

Aromatic Powder

Make 10 Gm.

Uses: Stimulant and Carminative, but is chiefly used as an adjuvant to other medicines.

Preparation: Fluidextractum Aromaticum, U. S. P.

PULVIS CRETAE COMPOSITUS, U. S. P.

Compound Chalk Powder

Make 10 Gm.

Uses: This powder is official for the purpose of having on hand the ingredients in a mixed condition for making the official chalk mixture.

Preparation: Mistura Cretae, U. S. P.

PULVIS IPECACUANHAE ET OPII, U. S. P.

Powder of Ipecac and Opium

Make 5 Gm.

Synonym: Dover's Powder—Compound Powder of Ipecac.

Uses: Diaphoretic and Sedative.

What per cent. of Opium does it contain?

What per cent. of Ipecac does it contain?

What per cent. of Morphine does the Powdered Opium used in making this powder contain? See U. S. P.

How much Morphine in 10 grains of this powder?

PULVIS GLYCYRRHIZAE COMPOSITUS, U. S. P.

Compound Powder of Glycyrrhiza

Make 25 Gm.

Synonym: Compound Licorice Powder.

Uses: Laxative.

The Oil of Fennel is used to give flavor and supposed to relieve the griping effect of the Senna. It is triturated with a portion of the sugar to insure thorough mixing and distribution through the powder.

PULVIS EFFERVESCENS COMPOSITUS. U. S. P.

Compound Effervescing Powder

Make two sets of powders.

Synonym: Seidlitz Powder.

Uses: Saline Purgative.

What is the common name of Potassium and Sodium Tartrate?

Rochelle Salt.

What is the weight of the powder in the blue paper?

10 Gms. (155 grains)

What is the weight of the powder in the white paper?

2.20 Gms. (34 grains)

What per cent. of Rochelle Salt does the powder contain?

See the U. S. P.

What reaction takes place when the powders are dissolved in water and mixed? Between the Tartaric Acid and the Sodium Bicarbonate forming sodium tartrate and liberating carbon dioxide, causing effervescence.

PULVIS ACETANILIDI COMPOSITUS, N. F.

Compound Acetanilid Powder

Make 5 Gm.

Uses: Antipyretic and Analgesic.

19. Waters.

The official waters of the U. S. P., include common water, distilled water, and sterilized distilled water.

The Medicated Waters are aqueous solutions of volatile substances.

The U. S. P. directs three different methods for the preparation of medicated waters, namely,—Simple agitation of the medicinal agent with recently boiled distilled water, by trituration of the volatile oil with purified talc and recently boiled distilled water, and by distillation.

AQUA ANISI, U. S. P.

Anise Water

Make 100 Cc.

Uses: Vehicle.

AQUA MENTHAE PIPERITAE, U. S. P.

Peppermint Water

Make 100 Cc.

Uses: Vehicle, very largely prescribed.

AQUA CAMPHORAE, U. S. P.

Camphor Water

Make 100 Cc.

Uses: Vehicle.

AQUA AMMONIAE, U. S. P.

Ammonia Water

Make 100 Cc.

10%

28 ---------- 0
10 ---------- 18 = 28

10/28 of 100 = 36 Cc. Stronger Ammonia Water.

18/28 of 100 = 64 Cc. Water.

Total 100 Cc. of 10% Ammonia Water.

The above is the practical way to prepare 10% Ammonia Water in the store. It can also be made by heating an Ammonium Salt with Milk of Lime and passing the gas into water until the required amount is absorbed.

Note:—The U. S. P. directions should be observed in handling Stronger Ammonia Water, and especially in opening a bottle to avoid the gas from blowing into the face.

Preparations: Linimentum Ammoniae, U. S. P.

Preparations: Linimentum Ammoniae, U. S. P.; Spiritus Ammoniae Aromaticus, U. S. P.; Lotio Ammoniacalis Camphorata, N. F.; Linimentum Opii Compositum, N. F.; Linimentum Saponata Camphoratum, N. F.; Spiritus Ammonii Anisatus, N. F.

20. Infusions.

Infusions are aqueous preparations made by extracting the drug with hot or cold water.

In the majority of cases boiling water is poured on the drug and allowed to macerate until cold; then it is strained.

Cold water is used if heat injures the drug, as in wild cherry.

Two infusions are recognized in the U. S. P., and five in the N. F.

Note the general formula for Infusions in the U. S. P.

INFUSUM DIGITALIS, U. S. P.

Infusion of Digitalis

Make 100 Cc.

Uses: Cardiac stimulant and diuretic.

INFUSUM SENNAE COMPOSITUM, U. S. P.

Compound Infusion of Senna

Make 100 Cc.

Synonym: Black Draught.

Uses: Purgative.

INFUSUM PRUNI VIRGINIANAE, N. F.

Infusion of Wild Cherry

Make 100 Cc.

Uses: Sedative.

Upon what does this preparation depend for its activity? Hydrocyanic Acid.

Does the Hydrocyanic Acid pre-exist in the bark? No, it is the result of the ferment Emulsin acting on the glucoside Amygdalin in the presence of water.

Why is the Infusion directed to be made with cold water? Hot water destroys the ferment and prevents the formation of Hydrocyanic Acid.

21. Decoctions.

Decoctions are aqueous preparations made by boiling a drug with water. Hard, woody drugs of close texture are best adapted for decoctions. Those containing volatile principles as well as those that are easily exhausted are best adapted for Infusions.

The U. S. P. does not recognize any specific decoction and only one decoction is recognized in the N. F., namely,—Compound Decoction of Sarsaparilla. The U. S. P. gives a general formula for preparing Decoctions, which see.

22. Liquores. Solutions.

Liquors are aqueous solutions of non-volatile substances. There are several exceptions to this definition, viz.

(a) Liquor Ammonii Acetatis, volatilized by heat.

(b) Liquor Formaldehydi, a gaseous solution of formaldehyde.

(c) Liquor Hydrogenii Dioxidi, volatilized by heat.

(d) Liquor Iodi Compositus, the iodine is volatile.

(e) Liquor Chlori Compositus, solution of chlorine gas.

(f) Liquor Antisepticus, a hydro-alcoholic solution of volatile substances.

The liquors constitute a very important class of official preparations. The majority of them are very active medicinal agents, and some are powerful poisons. There is no general formula to guide in making them and all must be studied separately.

Twenty-five are recognized in the U. S. P., and fifty-two in the N. F.

LIQUOR ACIDI ARSENOSI, U. S. P.

Solution of Arsenous Acid

Make 100 Cc.

This is an acid solution of arsenous acid in water, containing 1 per cent. of arsenous acid and 5 per cent. of diluted hydrochloric acid.

The hydrochloric acid does not combine with the arsenic trioxide to form the chloride, it simply aids solution. The arsenic trioxide combines with the water to make arsenous acid.

As_2O_3	+	$3H_2O$	=	$2H_3AsO_3$
Arsenic trioxide		Water		Arsenous acid

Synonyms: Hydrocholoric Solution of Arsenic. Solution of Arsenic Chloride.

Uses: Alterative.

Note: There are four U. S. P. solutions and two N. F. solutions containing arsenic. All of them contain 1 per cent. of arsenic, with the exception of Pearson's Solution of Sodium Arsenate of the N. F., which contains one-tenth of 1 per cent. of arsenic.

LIQUOR POTASSII ARSENITIS, U. S. P.

Solution of Potassium Arsenite

Make 100 Cc.

This is an alkaline solution of Potassium Arsenite, corresponding in amount to approximately 1 per cent. of arsenic trioxide.

The reaction taking place is supposed to be as follows:

As_2O_3	+	$4KHCO_3$	=	$2K_2HAsO_3$	+	$4CO_2$	+	H_2O
Arsenic trioxide		Potassium bicarbonate		Potassium arsenite		Carbon dioxide		Water

There is an excess of Potassium Bicarbonate, which with heat, is converted into carbonate and makes the preparation alkaline. The Tincture of Lavender Compound gives color and taste.

Synonym: Fowler's Solution.

Uses: Alterative, especially in malaria. Fowler's solution is the most popular of all the arsenic preparations.

How should the solution be preserved? See U. S. P.

How long should it be kept? Not over one year as it is slowly oxidized to arsenate which is less active.

LIQUOR ARSENI ET HYDRARGYRI IODIDI, U. S. P.

Solution of Arsenous and Mercuric Iodide

Make 100 Cc.

A simple solution containing 1 per cent each of arsenous iodide and red mercuric iodide.

Synonym: Donovan's Solution.

Uses: Alterative.

How should the solution be preserved? See U. S. P.

If the solution turns red to what is it due? Liberation of free iodine. The U. S. P. states that it must not be dispensed if darker than pale yellow.

What is the solubility of Red Mercuric Iodide? Almost insoluble in water.

How then does it dissolve in this preparation? It is soluble in the aqueous solution of arsenous iodide.

LIQUOR CALCIS, U. S. P.

Solution of Calcium Hydroxide

Make 1/20 of the formula.

Reaction: $CaO + H_2O = Ca(OH)_2$
Lime Water Calcium hydroxide

Synonym: Lime Water.

Uses: Antacid.

Preparations: Linimentum Calcis, U. S. P.
Lotio Flava, N. F.
Lotio Nigra, N. F.

What is the strength of the preparation? See U. S. P.

What has the temperature to do with the strength? See U. S. P.

Why does the U. S. P. state to reject the first water used in slacking the lime? Lime contains calcium chloride which is irritating, it being freely soluble in water can be removed in the first water.

When it is exposed to the air what happens? A pellicle of calcium carbonate is formed, and it should therefore be kept in well stoppered bottles.

LIQUOR AMMONII ACETATIS, U. S. P.

Solution of Ammonium Acetate

Make 50 Cc.

When Ammonium Carbonate is dissolved in Acetic Acid, strong effervescence takes place, the carbonate being converted into an acetate with the liberation of carbon dioxide.

Synonym: Spirit of Mindererus.

Uses: Diaphoretic, Diuretic.

Preparation: Liquor Ferri et Ammonii Acetatis.

Why does the U. S. P. direct the Ammonium Carbonate to be in hard, translucent pieces? Only the carbonate is in translucent pieces, that containing a coating of powder is bicarbonate which is not only insoluble, but inert.

Should this preparation be kept in stock? See U. S. P.

LIQUOR FERRI ET AMMONII ACETATIS, U. S. P.

Solution of Iron and Ammonium Acetate

Make 100 Cc.

This preparation is a clear, reddish-brown liquid. The color is due to ferric acetate formed between the ferric chloride and the solution of ammonium acetate. The solution must be acid to prevent precipitation of the basic ferric acetate.

$$\underset{\text{Ferric chloride}}{FeCl_3} + \underset{\text{Ammonium acetate}}{3NH_4C_2H_3O_2} = \underset{\text{Ferric acetate}}{Fe(C_2H_3O_2)_3} + \underset{\text{Ammonium chloride}}{3NH_4Cl}$$

Synonym: Basham's Mixture.

Uses: Chalybeate tonic.

Why is Glycerine used in the preparation? To prevent precipitation.

Should this preparation be kept in stock? See U. S. P.

LIQUOR PLUMBI SUBACETATIS, U. S. P.

Solution of Lead Subacetate

Make 50 Gm.

This is a clear, colorless liquid and must be well protected from the air to prevent the formation of the insoluble lead carbonate. For the same reason the U. S. P. directs boiling distilled water to get rid of oxygen, carbon dioxide, and other impurities that precipitate the lead.

$$\underset{\text{Lead acetate}}{Pb(C_2H_3O_2)_2} + \underset{\text{Lead oxide}}{PbO} = \underset{\text{Lead subacetate}}{Pb_2O(C_2H_3O_2)_2}$$

Synonyms: Goulard's Extract. Goulard's Solution.

Uses: Externally only, for sprains, bruises, etc., largely diluted.

Preparations: Liquor Plumbi Subacetatis Dilutus.

LIQUOR SODAE CHLORINATAE, U. S. P.

Solution of Chlorinated Soda

Make 100 Gm.

This is a clear, pale greenish liquid of chlorine compounds of sodium, containing not less than 2.5 per cent of availabe chlorine.

The solution should be kept in glass stoppered bottles, in a cool place, protected from light.

The chlorinated lime from which this preparation is made is " a product resulting from the action of chlorine upon clacium hydroxide, and containing not less than 30 per cent. of available chlorine." U. S. P.

Chlorinated lime is a mixture of calcium hypochlorite and calcium chloride. The reaction which takes place in the making of the solution is about as follows:

$$Ca(OCl)_2 + CaCl_2 + 2Na_2CO_3 = 2NaOCl + 2NaCl + 2CaCO_3$$

Calcium hypochlorite	Calcium chloride	Sodium Carbonate	Sodium hypochlorite	Sodium chloride	Calcium Carbonate

Synonym. Labarraque's Solution.

Uses: Disinfectant and bleaching agent. It has also been used in the treatment of wounds, ulcers, etc., and diluted with water for washing out the bladder, vagina, etc.

During the late World War a solution of chlorinated soda came largely into use in the treatment of gun-shot wounds, and is now widely known under the name of Carrel-Dakin solution. It is prepared from chlorinated lime, dried sodium carbonate and sodium bicarbonate.

Owing to the fact that chlorinated lime varies in its chlorine content, it should always be titrated before using it in making the Carrel-Dakin solution.

The solution after having been properly made should be well protected in amber glass. Exposed to the light it rapidly deteriorates and is unfit for use after 24 hours.

On page 657 of the U. S. D., 20th edition, will be found a formula for the preparation of the solution as well as a method for titrating it.

In the average drug store the solution could be prepared as follows:

Carrel-Dakin Solution

Chlorinated Lime, U. S. P.	184.00 Gm.
Dried Sodium Carbonate	92.00 Gm.
Sodium Carbonate	76.00 Gm.

Into a 12 liter bottle put the chlorinated lime and add 5 liters of water and shake frequently during a period of six hours or overnight. Dissolve the two sodium salts in 5 liters of water and add

this solution to the cholrinated lime mixture and shake well for a few minutes, and then let it stand at rest for thirty minutes. Siphon off the supernatant liquid and filter through paper. The solution is then ready for use.

LIQUOR CHLORI COMPOSITUS, N. F.

Compound Solution of Chlorine

Make 250 Cc.

Synonym: Chlorine Water.

Uses: Antiseptic.

This is an aqueous yellow liquid containing, when freshly prepared, about 0.35 per cent of available chlorine.

The solution must be freshly prepared when wanted and dispensed in well filled, amber glass bottles.

In some drug stores where a funnel provided with stop cock is not furnished, the solution may be prepared as follows:

Use a chemical flask of twice the capacity of the amount you intend to make. If you have not a flask, an ordinary bottle will answer.

Insert a cork notched on one side and provided with a hole in the center, which may be made with a cork borer or rat tail file, through which a funnel can be passed. Place in the neck of the funnel a pledget of absorbent cotton thoroughly wetted with water.

The bottle and funnel being perpared, then place in the bottle the potassium chlorate and add the hydrochloric acid previously diluted as directed in the formula. Immediately place the cork provided with funnel and cotton in the bottle and heat on water bath as directed, then remove from water bath and add cold water in several portions through the cotton, shaking after each addition until the solution measures the proper amount.

LIQUOR CRESOLIS COMPOSITUS, U. S. P.

Compound Solution of Cresol

Make 100 Gm.

The linseed oil with potassium hydroxide forms soft soap, the small quantity of alcohol aids saponification. The solution when finished contains 50 per cent of cresol.

It is a powerful germicidal solution, said to be twice as strong as phenol as a destroyer of micro-organisms. It is similar to many of the proprietary preparations on the market.

It is used for many different purposes, such as sterilizing instruments and the skin, diluted with warm water and used in fountain syringe as a douche; and it has been used internally as an antiseptic.

In the proportion of one fluid ounce to a gallon of warm water, used for washing dogs it not only kills the fleas, but makes the skin healthy and clean.

LIQUOR SODII BORATIS COMPOSITUS, U. S. P.

Compound Solution of Sodium Borate

Make 100 Cc.

The above is a very popular preparation and much used as a nasal spray.

The effervescence which takes place in the making of this preparation is due to the liberation of carbon dioxide from the sodium bicarbonate. The sodium borate is decomposed by the glycerin forming glyceryl borate and boric acid which reacts with the sodium bicarbonate liberating the carbon dioxide. The effervescence is not due to the phenol.

Synonym: Dobell's Solution.

LIQUOR MAGNESII CITRATIS, U. S. P.

Solution of Magnesium Citrate

Make one bottle.

The above is a clear solution of acid magnesium citrate. It is one of the most popular cathartic preparations.

The directions in the U. S. P. as to sterilization should be strictly observed.

The potassium bicarbonate added to the preparation lastly is decomposed by the excess of citric acid and furnishes the carbon dioxide, making the preparation more palatable.

In making the solution for stock the pharmacist always makes anywhere from ten to thirty or more bottles.

Magnesium Carbonate	150.00 Gm.
Citric Acid	330.00 Gm.
Syrup	600.00 Cc.

Dissolve the citric acid in 1500 Cc. of hot water in a suitable container, and having added the magnesium carbonate, previously mixed with 1000 Cc. of water, stir until it disolves. Add the syrup and bring the solution to the boiling point, at once introducing the oil of lemon, previously triturated with the purified talc, and filter while hot into a sterile container and add 400 Cc. of boiling water.

Having sterilized the citrate of magnesia bottles by rinsing in boiling water, transfer 350 Cc. of the solution to each bottle, when cool drop into each bottle 2.5 Gm. of potassium bicarbonate, preferably in tablet form and immediately close the bottle.

Synonym: Purgative Lemonade.

LIQUOR ANTISEPTICUS, N. F.

Antiseptic Solution

Make 100 Cc.

This preparation is quite similar to many of the proprietary preparations on the market that are sold under trade mark names.

By adding 2.5 Gm. of powdered hydrastis to the 1000 Cc. of the solution, it not only gives it a beautiful golden color, but improves the preparation medicinally.

Uses: It is used both internally and externally. Its main use is as a mouth wash and throat gargle, for which purpose it can be used full strength or diluted with water to suit.

LIQUOR ANTISEPTICUS ALKALINUS, N. F.

Alkaline Antiseptic Solution

Make 100 Cc.

Alkaline Antiseptic Solution is similar to a largely advertised trade preparation.

In the making of this preparation the reaction between the sodium borate, glycerin, and water forms boric acid, which acts on the potassium bicarbonate liberating carbon dioxide and causing effervescence.

Uses: Largely used as a nasal douche, mouth wash and gargle.

LIQUOR SODII PHOSPHATIS COMPOSITUS, N. F

Compound Solution of Sodium Phosphate

The formula given in the National Formulary is very unsatisfactory, owing to the fact that sodium phosphate in uneffloresced crystals is ordered in making the preparation. Sodium phosphate, after being kept in stock loses moisture and in weighing a given amount more phosphate of soda is weighed than intended. It is not altogether practical to cover the salt with water and air dry it before use as this takes much time.

Make 100 Cc. of the preparation by the formula given below.

Sodium Phosphate Exsiccated	39.6 Gm.
Citric Acid	13.0 Gm.
Glycerin	15.0 Cc.
Distilled Water, a sufficient quantity to make	100.0 Cc.

Dissolve the dried sodium phosphate and the citric acid in 80 Cc. of Distilled Water, heat to the boiling point and filter while hot into a sterile container, add the glycerine and sufficient boiled Distilled Water to make 100 Cc.

In making the preparation by the formula above, you not only overcome the danger of weighing too much phosphate of soda, thus causing the preparation to crystallize, but you also have a preparation that will keep better, owing to the fact that all salts containing much water of crystallization have stored up in them spores or micro organisms which cause the formation of growths in the solution.

Glycerine is used in the preparation as a preservative.

Compound solution of sodium phosphate is similar to many trade preparations on the market.

Uses: Laxative and cathartic.

LIQUOR FERRI CHLORIDI, U. S. P.

Solution of Ferric Chloride

Make 100 Cc.

Solution of Ferric Chloride is a reddish-brown liquid, having a faint odor of hydrochloric acid, and acid, strongly styptic taste, and an acid reaction; specific gravity from 1.29 to 1.32.

Two chemical reactions take place in making the solution:

First.

$$\underset{\text{Iron}}{Fe} + \underset{\text{Hydrochloric Acid}}{2HCl} = \underset{\text{Ferrous Chloride}}{FeCl_2} + \underset{\text{Hydrogen}}{H_2}$$

Second.

$$\underset{\text{Ferrous chloride}}{3FeCl_2} + \underset{\text{Hydrochloric acid}}{3HCl} + \underset{\text{Nitric acid}}{HNO_3} = \underset{\text{Ferric chloride}}{3FeCl_3} + \underset{\text{Nitric Oxide}}{NO} + \underset{\text{Water}}{2H_2O}$$

The solution of Ferrous chloride is converted into ferric chloride by the addition of nitric and hydrochloric acid. The U. S. P. states, if the solution has acquired a black color, continue the addition of nitric acid drop by drop until red fumes are not longer evolved and the solution assumes a clear, reddish-brown color.

If it turns black, this is due to incomplete oxidation, and the solution must be heated in an open vessel and the nitric acid added drop by drop until the reaction is complete. The last portion of nitric acid must be cautiously added, as it is very difficult to remove the excess without some loss of ferric chloride and the formation of oxychloride. A small amount is redissolved by the addition of the third portion of hydrochloric acid ordered in the formula.

If on standing this preparation shows a precipitate of oxychloride, the mixture can be heated and a few drops of hydrochloric acid added to redissolve it.

Uses: In the making of other preparations, particularly tincture of ferric chloride.

Preparations: Ferri Chloridum, U. S. P.; Tinctura Ferri Chloridi, U. S. P.; Gossypium Stypticum, N. F.; Tinctura Ferri Chloridi Aetherea, N. F.; Tinctura Ferri Citro-chloridi, N. F.

What is the strength of this preparation? See U. S. P.

How should the solution be stored away? See U. S. P.

What test is used to show absence of nitric acid? See U. S. P.

LIQUOR FERRI TERSULPHATIS, U. S. P.

Solution of Ferric Sulphate

Make 100 Gm.

This is an aqueous solution of normal sulphate of iron, corresponding to not less than 9.5 per cent., nor more than 10.5 per cent. of metallic iron.

The Solution of Ferric Subsulphate (Monsel's Solution, which see in the U. S. P.) is a solution of basic sulphate of iron, there not being enough acid used to make the normal sulphate. The working formula of the two solutions are the same, the difference being that there is more sulphuric acid used in making the normal solution and there is less sulphate of iron used in making the normal solution.

The chemical change taking place in making the Liquor Ferri Tersulphatis is as follows:

$6FeSO_4$	+	$3H_2SO_4$	+	$2HNO_3$	=	$3Fe_3(SO_4)_3$	+	$2NO$	+	$4H_2O$
Ferrous Sulphate		Sulphuric acid		Nitric acid		Ferric sulphate		Nitric oxide		Water

The nitric acid is used for the purpose of oxidizing the ferrous sulphate into ferric sulphate.

Solution of Ferric Sulphate is too irritant for medicinal use. It is employed in the making of other iron preparations and is the starting point in the making of the scale salts of iron. It should always be kept on hand for the ready preparation of Ferric Hydroxide with Magnesium Oxide, the official antidote to arsenic.

LIQUOR FERRI CITRATIS, N. F.

Solution of Ferric Citrate

Make 50 Gm.

The first step in making this solution is the preparation of Ferric Hydroxide.

$Fe_2(SO_4)_3$	+	$6NH_4OH$	=	$2Fe(OH)_3$	+	$3(NH_4)_2SO_4$
Ferric sulphate		Ammonium hydroxide		Ferric hydroxide		Ammonium sulphate

The second step is the making of the solution of ferric citrate.

$Fe(OH)_3$	+	$H_3C_6H_5O_7$	=	$FeC_6H_5O_7$	+	$3H_2O$
Ferric hydroxide		Citric acid		Ferric citrate		Water

The directions given in the N. F. should be carefully followed. The moist precipitate of ferric hydroxide should be freed from ammonium sulphate by repeated washing with cold water.

When the ferric hydroxide and citric acid are mixed and heated on the water bath, it is important not to employ a higher heat than is directed, 60 degrees C. A higher heat in the presence of an organic acid will reduce the ferric to a ferrous compound.

Uses: Iron tonic.

FERRI CITRAS (U. S. P., VIII)

Citrate of Iron

Solution of Ferric Citrate, a convenient quantity.

Evaporate the solution on a water bath, at a temperature not exceeding 60 degrees C, to the consistence of syrup, and spread it on pill tile or plates of glass, so that, when dry, the salt may be obtained in scales.

Caution—Do not employ heat higher than that mentioned, to avoid decomposition.

Spread thinly with aid of glass stirring rod, and leave to dry at temperature of room.

Ferric Citrate occurs as thin, garnet red scales.

Uses: Chalybeate tonic.

23. Mucilages.

Mucilages are aqueous preparations of gummy substances in water. They are all prone to spoil and should be freshly made when wanted.

Two mucilages are official in the U. S. P., and two in the N. F. Three of the mucilages are in a liquid condition and one, mucilage of tragacanth, is in the form of a jelly.

MUCILAGO TRAGACANTHAE, U. S. P.

Mucilage of Tragacanth

Make 50 Gm.

This preparation should be strained with force several times to make it smooth and uniform.

Its principal use is in making toilet lotions.

TOILET LOTION

Menthol	.50
Glycerin	15.00
Alcohol	15.00
Mucilage of Tragacanth	25.00
Rose Water q-s	100.00

Add the glycerine to the mucilage of tragacanth and some of the rose water; then add the menthol previously dissolved in the alcohol and sufficient rose water to make the 100 Cc.

The above is used for chapped hands and face and useful after shaving. The formula is given mainly to show the use of mucilage of tragacanth.

24. Aceta. Vinegars.

Vinegars are solutions of medicinal substances in dilute acetic acid. The official dilute acetic acid is made by mixing one part of official acetic acid with five parts of water, and contains 6 per cent of absolute acetic acid.

The U. S. P. recognizes only one vinegar, vinegar of squills, while the N. F. contains two vinegars, aromatic vinegar and vinegar of opium.

ACETUM SCILLAE, U. S. P.

Vinegar of Squills

Make 50 Cc.

Vinegar of squills is seldom prescribed, its principal use is in making the syrup of squills.

The U. S. P. directs the preparation to be heated to the boiling point and filtered while hot. This is for the purpose of coagulating the albuminous matter which is filtered out.

25. Syrups.

Syrups are concentrated solutions of sugar in water, acetous, or hydro-alcoholic menstruum. They may be divided into two classes, flavoring syrups, made of aromatic substances and used solely as vehicles, and medicated syrups, which have medicinal value.

Syrups are made: 1. By simple solution of the medicinal agent in simple syrup. 2. By dissolving the sugar with the aid of heat. 3. By percolation. 4. By dissolving the sugar in the cold.

Since syrups constitute a very important class of pharmaceutical preparations, they must not only be carefully made, but must be well preserved.

In the first place the very best sugar obtainable should be used and in the absence of distilled water, good pure, recently boiled, water should be used.

A fresh lot of syrup should never be placed in a bottle containing old syrup. The bottle or container should be thoroughly washed with alkali, and sterilized with boiling water and allowed to drain.

A syrup that has once fermented cannot be restored. Attempts have been made to restore them by boiling, but they soon ferment again. They should, therefore, be made in quantities that will be used in a short time.

SYRUPUS, U. S. P.

Syrup

Simple Syrup

Make 100 Cc.

You will note that two methods are official for the preparation of simple syrup. Make your syrup by cold precolation.

SYRUPUS ACIDI CITRICI, U. S. P.

Syrup of Citric Acid

Make 100 Cc.

Synonym: Syrup of Lemon.

SYRUPUS SCILLAE, U. S. P.

Syrup of Squills

Make 100 Cc.

Uses: Expectorant.

SYRUPUS SCILLAE COMPOSITUS, U. S. P.

Compound Syrup of Squills

Make 100 Cc.

Synonym: Hive Syrup, Coxe's Hive Syrup.

Uses: Expectorant, croup in children.

Compound Syrup of Squills contains approximately one grain of Antimony and Potassium Tartrate (Tartar Emetic) in each fluid-ounce.

SYRUPUS SARSAPARILLAE COMPOSITUS, U. S. P.

Compound Syrup of Sarsaparilla

Make 100 Cc.

This syrup has no medicinal value whatever and is used solely as a vehicle, especially for bichloride of mercury and potassium iodide.

SYRUPUS IPECACUANHAE, U. S. P.

Syrup of Ipecac

Make 100 Cc.

The object of diluting the fluid extract of ipecac with the water and acetic acid, as ordered in the U. S. P., is for the purpose of bringing the active principles of ipecac into solution, by changing them to acetates. It is allowed to stand twenty-four hours for this purpose.

The glycerin is added to the filtered liquid as a preservative.

Uses: Expectorant, very useful as an emetic in small children in case of croup.

SYRUPUS PRUNI VIRGINIANAE, U. S. P.

Syrup of Wild Cherry

Make 100 Cc.

The official directions of the U. S. P. which direct the moistening of the wild cherry bark with water and glycerine, packing in percolator, adding sufficient water to saturate and leave a stratum above, and then macerate for twenty-four hours, are for the purpose of allowing reaction to take place between certain constituents of the bark in the presence of moisture, forming hydrocyanic acid. The sugar can then be dissolved by agitation without heat or by cold percolation.

The glycerine serves two purposes, in that it yields a darker syrup, due to the fact that it dissolves out tannin from the bark, and it is also a good preservative.

It is important that no heat be employed in dissolving the sugar, as the hydrocyanic acid is very volatile and would be driven off by heat.

Uses: Vehicle in cough Mixtures.

SYRUPUS CALCII LACTOPHOSPHATIS, U. S. P.

Syrup of Calcium Lactophosphate

Make 100 Cc.

The reaction taking place in the making of this syrup is as follows:

$$\underset{\text{Calcium Carbonate}}{CaCO_3} + \underset{\text{Lactic acid}}{2HC_3H_5O_3} = \underset{\text{Calcium lactate}}{Ca(C_3H_5O_3)_2} + \underset{\text{Carbon dioxide}}{CO_2} + \underset{\text{Water}}{H_2O}$$

$$\underset{\text{Calcium lactate}}{Ca(C_3H_5O_3)_2} + \underset{\text{Phosphoric acid}}{2H_3PO_4} = \underset{\text{Calcium acid phosphate}}{Ca(H_2PO_4)_2} + \underset{\text{Lactic acid}}{2HC_3H_5O_3}$$

From the above it will be seen that two chemical changes take place in the preparation of this syrup. The first is the formation of calcium lactate and the second the formation of calcium acid phosphate (Calcium lactophosphate).

The calcium lactophosphate in the fresh moist condition is much more readily soluble in the acid than when in the dry state, therefore the U. S. P. starts with calcium carbonate.

When the phosphoric acid is added to the calcium lactate solution it should be diluted with more water than is ordered; at least twice as much water as acid should be used, to prevent precipitation. The mixture should be stirred constantly.

The proper amount of water is then added and the solution is filtered and the orange flower water and glycerin added to the filtrate. The sugar is dissolved in the mixed liquids by agitation.

This syrup when first prepared is a colorless solution, but if kept on hand for some time, it gradually becomes darkened, due to the acid acting on the sugar. It should therefore be made in quantities that will be used in a short time.

If one is out of this syrup, in an emergency, it may be prepared by dissolving one hundred grains of calcium lactophosphate in eight fluid ounces of syrup flavored with orange flower water, and adding one-half fluid-dram of hydrochloric acid to prevent precipitation.

Uses: Nutritive tonic.

SYRUPUS TOLUTANUS, U. S. P.

Syrup of Tolu

Make 100 Cc.

Uses: Vehicle.

SYRUPUS RHEI AROMATICUS, U. S. P.

Aromatic Syrup of Rhubarb

Make 100 Cc.

This syrup is made from the aromatic tincture of rhubarb, while the plain syrup of rhubarb is made from the fluid extract. The potassium carbonate is used in both syrups for the purpose of retaining the resinous matter in solution, thereby producing a clear syrup.

Uses: Laxative and especially useful in diarrhoea in small children.

SYRUPUS PICIS LIQUIDAE, U. S. P.

Syrup of Tar

Make 100 Cc.

The alcohol is used for the purpose of dissolving the pine tar and the magnesium carbonate is used as a clarifying agent.

Uses: Expectorant.

SYRUPUS FERRI IODIDI, U. S. P.

Syrup of Ferrous Iodide

Make 100 Cc.

The reaction taking place in the making of this syrup is as follows:

Fe	+	21	=	FeI_2
Iron		Iodine		Ferrous Iodide

The chemical reaction taking place between the iron and iodine may generate sufficient heat to cause some of the iodine to volatilize, hence, the U. S. P. states to check the reaction, by placing the flask in cold water. When the solution has acquired a greenish color and has lost the odor of iodine, the U. S. P. directs to heat it to boiling. This is for the purpose of being sure that the reaction is complete. The sugar added at once is to prevent oxidation. It is filtered into the remaining sugar for the same purpose (i. e. preventing oxidation).

An excess of iron over iodine is used as the iron can be filtered out.

The Diluted Hypophosphorous Acid is added to the finished syrup to prevent oxidation and liberation of iodine.

This syrup is a transparent, pale yellowish-green liquid and is best preserved in small bottles, completely filled, and stored in a light place. Light, being a reducing agent, retards the liberation of iodine.

Uses: Alterative. Much used.

SYRUPUS HYPOPHOSPHITUM, U. S. P.

Syrup of Hypophosphites

Make 100 Cc.

This syrup is a simple solution of the hypophosphites of calcium, potassium, and sodium. The calcium hypophosphite is often very slowly soluble, which no doubt is due to impurities, hence the U. S. P. very properly directs a small amount of diluted hypophosphorous acid which aids the solubility. The small amount of glycerine is used as a preservative.

Uses: Tonic. Supposed to be beneficial in lung trouble.

SYRUPUS HYPOPHOSPHITUM COMPOSITUS, N. F.

Compound Syrup of Hypophosphites

Make 100 Cc.

The sodium citrate is used for the purpose of aiding solution of the ferric and manganese hypophosphite. The diluted hypophosphorous acid converts the alkaloids quinine and strychnine into soluble hyphosphites, and also aids the solution of calcium hypophosphite. As stated in the description of the above syrup, calcium hypophosphite frequently contains impurities, mainly phosphate, which is insoluble in water.

Uses: Tonic.

SYRUPUS ERIODICTYI AROMATICUS, N. F.

Aromatic Syrup of Eriodictyon

Aromatic Syrup of Yerba Santa

Make 100 Cc.

Yerba Santa is a resinous drug, and the solution of potassium hydroxide is for the purpose of dissolving this and holding it in solution.

The magnesium carbonate is the clarifying agent.

This syrup is a splendid vehicle, especially for quinine, and is very largely used. It is quite similar to several trade preparations on the market.

SYRUPUS PINI STROBI COMPOSITUS. N. F.

Compound Syrup of White Pine

Make 100 Cc.

The vegetable drugs are extracted by maceration and percolation. It is doubtful whether the drugs are completely exhausted with the menstruum used.

The syrup is used as a cough expectorant, oftentimes with the addition of other substances.

26. Glycerites.

Glycerites are solutions of medicinal agents in glycerine. There is one exception, Glycerite of Starch, which is a plastic mass.

The Glycerites are permanent preparations and miscible with alcohol and water. They should be preserved in well closed containers, owing to the fact that glycerin is very hygroscopic.

Five Glycerites are official in the U. S. P. and six in the N. F.

GLYCERITUM ACIDI TANNICI, U. S. P.

Glycerite of Tannic Acid

Make 40 Gm.

Glycerite of Tannic Acid is used internally and externally. It is no doubt the most satisfactory preparation of Tannic Acid for external use.

While the Tannic Acid is soluble in the glycerin in the cold, the heat directed hastens the solution.

We often receive prescriptions for Tannic Acid a certain amount and Glycerin quantity sufficient for a certain amount. The pharmacist should remember the directions of the official preparation and fill the prescription accordingly.

Avoid metallic utensils in making any preparation containing tannin.

Uses: Astringent. Much used externally to prevent sore nipples.

GLYCERITUM AMILI, U. S. P.

Glycerite of Starch

Make one-half the formula.

If this preparation is made strictly according to the directions of the U. S. P., it is difficult to get a perfectly smooth preparation, owing to the sudden chilling when the starch mixture is added to the hot glycerin, thus causing lumps to form.

The high heat ordered is necessary to rupture the starch cells and render them soluble. The heat must be employed very cautiously to prevent scorching.

If the finely powdered starch is thoroughly triturated with the water to a homogeneous mixture and mixed with the glycerin and the whole then heated until a translucent jelly is formed, you will rarely fail to get a good preparation.

The Glycerite is very hygroscopic and must be preserved in tightly closed containers.

Uses: Mainly as a vehicle for non-greasy ointment-like preparations.

GLYCERITUM BOROGLYCERINI, U. S. P.

Glycerite of Boroglycerin

Make 50 Gm.

This is a 50 per cent. solution of glyceryl borate in glycerine.

Reaction.

$$\underset{\text{Glycerin}}{C_3H_5(OH)_3} + \underset{\substack{\text{Boric}\\\text{acid}}}{H_3BO_3} = \underset{\substack{\text{Glyceryl}\\\text{borate}}}{C_3H_5BO_3} + \underset{\text{Water}}{3H_2O}$$

Uses: Antiseptic.

27. Tinctures.

Tinctures are alcoholic or hydro-alcoholic solutions of non-volatile or only partially volatile substances. They differ from spirits in that spirits are alcoholic solutions of volatile substances. Tincture of Iodine is an exception to the rule, iodine being very volatile.

Tinctures constitute one of the very important classes of pharmaceutical preparations 103 Tinctures are official in the U. S. P. and N. F.

Tinctures are made by percolation, maceration and by direct solution. The great majority of tinctures are 10 per cent. strength, especially those of potent drugs, while the non-potent are 20 per cent. strength.

TINCTURA RHEI AROMATICA, U. S. P.

Aromatic Tincture of Rhubarb

Make 100 Cc.

This tincture contains the aromatic drugs cinnamon, cloves, and nutmeg. The main use of the tincture is in making the aromatic syrup of rhubarb.

Preparation: Syrupus Rhei Aromaticus, U. S. P.

TINCTURA GENTIANAE COMPOSITA, U. S. P.

Compound Tincture of Gentian

Make 100 Cc.

Uses: Much used as a bitter tonic.

TINCTURA LAVANDULAE COMPOSITA, U. S. P.

Compound Tincture of Lavender

Make 100 Cc.

Compound Tincture of Lavender is made by maceration of the drugs in the alcoholic menstruum in which the oils have been dissolved. The tincture has a beautiful red color due to the red saunders.

Synonym: Compound Spirit of Lavender.

Uses: Said to be good for nausea and flatulence. Mainly used for flavor and color, as in Fowlers Solution of Arsenic.

TINCTURA IODI, U. S. P.

Tincture of Iodine

Make 50 Cc.

Tincture of Iodine is an alcoholic solution of iodine and potassium iodide, containing not less than 6.5 Gm. nor more than 7.5 Gm. of iodine and not less than 4.5 Gm. nor more than 5.5 Gm. of potassium iodide in each 100 Cc.

The addition of the potassium iodide is for the double purpose of preventing or retarding the formation of hydriodic acid, and to prevent precipitation when the tincture is mixed with water.

The small amount of water in the tincture is for the purpose of dissolving the potassium iodide.

Uses: Counter-irritant, antiseptic, and germicide.

TINCTURA NUCIS VOMICAE, U. S. P.

Tincture of Nux Vomica

Make 100 Cc.

In the U. S. P., VIII, this tincture was prepared from the solid extract as follows: Extract of Nux Vomica (containing not less than 5 per cent. of Strychnine) 20 Gm. Alcohol 750 Cc., and water 250 Cc. The tincture is now made from the ground drug. The standardization was also changed from 0.1 Gm. of strychnine in 100 Cc. to not less than 0.237 Gm. nor more than 0.263 Gm. of alkaloids of nux vomica in 100 Cc.

In making the tincture the U. S. P. directs the rate of flow not to exceed 10 drops per minute.

In collecting the percolate, the receiving vessel should be free from moisture, as nux vomica contains considerable fat and the tincture turns cloudy when mixed with water.

Uses: Bitter tonic.

TINCTURA FERRI CHLORIDI, U. S. P.

Tincture of Ferric Chloride

Make 50 Cc.

The above tincture is made by simple solution of the solution of ferric chloride with the alcohol. The directions of the U. S. P. for it to stand at least three months before dispensing are to insure uniformity by bringing all changes to completion between the free acid of the solution of ferric chloride and the alcohol forming compound ethers.

When the tincture is exposed to the light, the iron salt is slowly reduced to the ferrous state, hence the tincture should be kept in amber colored bottles.

To prevent the acid and iron from acting on the enamel of the teeth, when taken into the mouth, it should be diluted with water and taken through a glass tube.

Uses: Probably the most largely used preparation of iron as a chalybeate in anaemia and debilitated conditions. It is also used locally in tonsilitis, etc.

Preparation: Liquor Ferri et Ammonii Acetatis.

TINCTURA CINCHONAE COMPOSITAE, U. S. P.

Compound Tincture of Cinchona

Make 100 Cc.

The above tincture is made from red cinchona, bitter orange peel and serpentaria by percolation.

The U. S. P. directs that 100 Cc. of the tincture shall yield not less than 0.4 Gm. nor more than 0.5 Gm. of the alkaloids of cinchona

Synonym: Huxham's Tincture of Bark. Compound Tincture of Peruvian Bark.

Uses: Bitter tonic and febrifuge.

Preparation: Gargrai:sma Guaiaci Composita, N. F.

TINCTURA BENZOINI COMPOSITA, U. S. P.

Compound Tincture of Benzoin

Make 50 Cc.

Compound Tincture of Benzoin is made by macerating the drugs in the alcohol for three days and then filtering. The resinous tincture is incompatible with water and perfectly dry vessels must be used in its preparation.

The preparation is very similar to many of the old time semi-proprietary preparations: Wade's, Vervain's, Friar's, Saint Victor's, Jesuit's, Swedish, Persian and Turlington's Balsam. While Compound Tincture of Benzoin is not identical with the proprietaries just mentioned, it is generally dispensed on calls for any of the above.

It is of a deep red-brown color and a pleasant balsamic odor.

Uses: It is sometimes given internally in bronchitis. It is often used as an inhalant by adding to hot water and inhaling the vapors in the early stages of bronchitis. Locally it is used as a protective for ulcers, sore nipples, etc.

TINCTURA OPII CAMPHORATA, U. S. P.

Camphorated Tincture of Opium

Make 100 Cc.

The above tincture, better known as Paregoric, is the weakest preparation of opium that we have. It contains 0.4 of 1 per cent. of opium or 4 Gm. in 1000 Cc. In the absence of powdered opium the preparation can be made from the Tincture of Opium, by taking 40 Cc. of the tincture instead of the 4 Gm. of powdered opium.

Each teaspoonful of paregoric contains approximately one-fourth grain of opium.

Synonym: Paregoric. (Opii tinctura benzoici P. I.)

Uses: Anodyne and carminative. Largely employed to relieve abdominal pain, check diarrhoea, allay cough, and as a mild sedative for infants.

Preparations: Mistura Glycyrrhizae Composita. Mistura Pectoralis, Stokes, N. F.

TINCTURA OPII, U. S. P.

Tincture of Opium

Make 100 Cc.

Granulated Opium	100 Gm.
Alcohol	400 Cc.
Water,	
Diluted Alcohol, each, a sufficient quantity to make about	1000 Cc.

Heat 400 Cc. of water to boiling and pour it on the granulated opium contained in a suitable vessel and stir occasionally, until the mixture becomes cold. Strain through muslin, express the residue, and reserve this infusion. Repeat this extraction with portions of 250 Cc. of hot water until the opium is completely exhausted. Evaporate the second and succeeding portions of infusions on a water bath, to a soft extract. Dissolve this extract in the reserve infusion and transfer to a bottle and add 400 Cc. of alcohol. Let stand overnight and filter and wash the bottle and filter with sufficient dilute alcohol to make 950 Cc.

Assay a portion as directed in the U. S. P., and adjust the volume of the finished Tincture so that each 100 Cc. contains 1 Gm. of anhydrous morphine.

The tincture has a deep reddish-brown color and the characteristic odor and bitter taste of opium.

Synonym: Laudanum. Tinctura Thebaica. (Opii tinctura I. P.)

Uses: Anodyne and hypnotic.

Preparations: Linimentum Opii Compositum, N. F.; Lotio Plumbi et Opii, N. F.; Mistura Camphorae Acida, N. F.; Mistura Carminativa, N. F.; Mistura Copaibae et Opii, N. F.; Mistura Magnesiae, Asafoetidae et Opii, N. F.; Mistura Opii et Chloroformi Composita, N. F.; Mistura Opii et Rhei Composita, N. F.; Mistura Opii et Sassafras, N. F.; Tinctura Kino et Opii Composita, N. F.; Tinctura Pectoralis, N. F.

What is the assay requirement for Tincture of Opium? See U. S. P.

How much Morphine in one fluid-dram of the tincture?

TINCTURA OPII DEODORATI, U. S. P.

Tincture of Deodorized Opium

Make 100 Cc.

Deodorized Tincture of Opium is of the same morphine strength as the plain tincture of opium. In order to deprive the opium of its peculiar nauseating principle, to which the odor of the drug is due, the U. S. P. directs that the infusion shall be treated with purified petroleum benzin. Formerly ether was used instead of benzin, but the benzin is preferable to the ether in that benzin does not form an emulsion like ether. A method which is less trouble, and gives equally as satisfactory results is to use melted paraffin in place of the benzin. To the hot infusion is added the paraffin in small pieces and it is shaken and allowed to cool. The paraffin crust is then broken and the deodorized liquid is poured off.

Uses: Same as Tincture of Opium, but is not supposed to produce nausea, headache, and bad after-effects.

Preparation: Tinctura Ipecacuanhae et Opii, N. F.

28. Spirits.

Spirits are alcoholic solutions of volatile substances. Twenty-three spirits are recognized in the U. S. P. and N. F. all of which can be prepared by the pharmacist in any store, with the exception of two.

The majority of the spirits are solutions of volatile oils, and only the very best oil should be used, as the value of the finished product depends entirely on the oil used. Some of the volatile oils acquire a terebinthinate odor, especially is this true of orange peel, lemon, nutmeg, and juniper, and when in this condition it should not be used.

When the above mentioned oils are received in stock, the cork should be drawn from the bottle and about 5 per cent of alcohol added to the oil. This will prevent them from acquiring the terebinthinate odor.

Spirits are frequently called Essences.

SPIRITUS CAMPHORAE, U. S. P.

Spirit of Camphor

Make 50 Cc.

Spirit of Camphor is no doubt one of the most universally used preparations of the entire pharmacopoeia. It is used internally and externally, and is a common household remedy for many ailments.

Synonym: Tincture of Camphor.

Uses: Internally in diarrhoea, also in hysteria, etc. Externally it is used in liniments.

Preparations: Lotio Ammoniacalis Camphorata, N. F.; Mistura Opii et Chloroformi Composita, N. F.; Mistura Opii et Rhei Composita, N. F.; Tinctura Kino et Opii Composita, N. F.; Tinctura Pectoralis, N. F.

SPIRITUS MENTHAE PIPERITAE, U. S. P.

Spirit of Peppermint

Make 50 Cc.

The peppermint leaves are ordered macerated in water for one hour and then strongly expressed. The water removes water-soluble compounds and a more permanent green color is produced.

Synonym: Essence of Peppermint.

Uses: Carminative.

SPIRITUS AMMONIAE AROMATICUS, U. S. P.

Aromatic Spirit of Ammonia

Make 100 Cc.

In making Aromatic Spirit of Ammonia the ammonium carbonate is added to the dilute ammonia water in a suitable flask and allowed to stand for twelve hours. This is for the purpose of converting any insoluble carbonate to the normal or soluble carbonate. The oils are dissolved in the alcohol and the solution of ammonium carbonate is added to the alcoholic solution and the whole allowed to stand for twenty-four hours. This is for the purpose of allowing any insoluble salt to be precipitated, whereby it is filtered out.

The preparation is a nearly colorless liquid, but it gradually acquires a yellow color. This coloration is due to the ammonia acting on the oils as well as on impurities in the alcohol. The coloration in no wise interferes with the medicinal properties of the preparation.

Uses: Stimulant and Carminative. When administered should be largely diluted.

Preparations: Tinctura Guaiaci Ammoniata, U. S. P.; Tinctura Valerianae Ammoniata, U. S. P.; Liquor Sodae et Menthae, N. F.; Tinctura Kino et Opii Composita, N. F.

SPIRITUS AETHERIS NITROSI, U. S. P.

Spirit of Nitrous Ether

It is not practicable to make this preparation in the average store by the formula given in the U. S. P. The result is that the pharmacists buy the preparation from some reliable manufacturer.

The spirit deteriorates rapidly and loses strength and the great majority of that purchased from drug jobbers, drawn from large containers, is of inferior quality. The spirit should be preserved in small, well stoppered bottles (amber colored) in a cool and dark place.

In the author's opinion, the most practicable way of making the spirit and dispensing a preparation that will meet the requirements, is to purchase the concentrated nitrous ether in sealed glass tubes, (not in bottles), and mix this with the necessary amount of alcohol. In this way small amounts can be made and on very short order.

Synonym: Sweet Spirit of Nitre.

Uses: Diaphoretic and diuretic.

Preparations: Mistura Glycyrrhizae Composita, U. S. P.; Mistura Copaibae, N. F.; Mistura Copaibae et Opii, N. F.

What is the U. S. P. requirement for the spirit?

29. Fluidextracts.

Fluidextracts are concentrated solutions of the active principles of vegetable drugs, containing alcohol either as a solvent or as a preservative. Each cubic centimeter of fluidextract is supposed to represent one gram of the drug. Those fluidextracts owing their activity to some specific alkaloid, the U. S. P. directs to be stardardized to a certain alkaloidal strength.

The official directions for the preparation of fluidextracts are intended for the quantity of drug designated in the formula. In operating on large quantities of drugs, manufacturers are compelled to modify the formula to some extent, especially fineness of powder, firmness of packing, etc. In some cases they resort to maceration and expression instead of percolation. The rate of percolation for the quantities given in the U. S. P. should not exceed 10 drops per minute.

Fluidextracts should be set aside for at least three months before they are bottled for the market. The menstruum dissolves certain extractive matter which it is incapable of retaining in perfect solution under varying changes of temperature, and in three months time this will be precipitated, when the preparation can be filtered and bottled. Fluidextracts made with heat show a greater deposit than those made without heat.

Forty-eight fluidextracts are recognized in the U. S. P. and ninety in the N. F.

FLUIDEXTRACTUM GLYCYRRHIZAE, U. S. P.

Fluidextract of Glycyrrhiza

Fluidextract of Licorice

Make 100 Cc.

The addition of the ammonia water to the menstruum is for the purpose of extracting the glycyrrhizin (the sweet principle of the licorice) which is present in the drug in an insoluble form, but is rendered soluble by the ammonia.

Chloroform water is used instead of plain water because it is a preservative and prevents the preparation from becoming sour during the process of making.

The first fifty per cent of the percolate is set aside as reserve portion which is later dissolved in the evaporated percolate; then water is added to make the required amount. This is now mixed with the alcohol and allowed to stand for seven days to allow precipitation of mucilaginous and other inert matter, when the preparation is filtered.

Uses: Vehicle.

Preparations: Elixir Glycyrrhiza, U. S. P.; Syrupus Sarsaparillae Compositus, U. S. P.; Elixir Glycyrrhizae Aquosum, N. F.; Elixir Glycyrrhizae Aromaticum, N. F.; Elixir Taraxaci Compositum, N. F., Syrupus Cimicifuga Compositum, N. F.

FLUIDEXTRACTUM SENNAE, U. S. P.

Fluidextract of Senna

Make 100 Cc.

Fluidextract of Senna is prepared by type process "A" using a mixture of one volume of alcohol and two volumes of water as the menstruum. The working formula is entirely different to that of the 8th U. S. P., which first percolated the drug with alcohol, rejected the percolate in order to get rid of the griping resinous principle, and then after drying the drug it was percolated with dilute alcohol.

Uses: Laxative and cathartic.

Preparations: Syrupus Sarsaparillae Compositus, U .S. P.; Syrupus Sennae, U. S. P.; Elixir Cascarae Compositum, N. F.; Elixir Catharticum Compositum, N. F.; Syrupus Ficorum Compositus, N. F.; Syrupus Sennae Aromaticus, N. F.; Syrupus Sennae Compositus, N. F.

FLUIDEXTRACTUM CASCARAE SAGRADAE AROMATICUM. U. S. P.

Aromatic Fluidextract of Cascara Sagrada

Make 100 Cc.

The cascara sagrada is mixed with the magnesium oxide and moistened with the boiling water and set aside for two hours for

the purpose of removing the bitter taste of the drug. The preparation is made aromatic with the benzosulphinide, the extract of glycyrrhiza and the volatile oils.

It will be noticed that the dose of the aromatic fluidextract is double that of the straight fluidextract, and that the same amount of cascara is used in making both. This is due to the fact that the magnesium oxide in removing the bitter taste destroys some of the activity of the drug. The dose of the aromatic fluidextract really should be at least four times that of the straight or bitter fluidextract.

Synonym: Tasteless Fluidextract of Cascara. Sweet Cascara.

Uses: One of the most largely used laxatives.

Preparations: Elixir Cascarae Sagradae, N. F.; Elixir Cascarae Sagradae Compositum, N. F.

FLUIDEXTRACTUM PRUNI VIRGINIANAE, N. F.

Fluidextract of Wild Cherry

Make 100 Cc.

This fluidextract official in the U. S. P. 8th, was made without any evaporation. The N. F. directs that the last portion be evaporated to a soft extract and dissolved in the reserve portion. In all probability the fluidextract was better when made without the heat.

Uses: Mainly in cough mixtures as a sedative.

FLUIDEXTRACTUM BELLADONNAE RADICIS, U. S. P.

Fluidextract of Belladonna Root

Make 100 Cc.

Uses: Mydriatic, anodyne, stimulant, etc.

Preparation: Linimentum Belladonnae.

30. Fluidglycerites.

Fluidglycerites are intended to be the same drug strength as Fluidextracts. They are made with a menstruum composed of a mixture of glycerine and water, followed by chloroform and water, and contain in the finished preparation 50 per cent of glycerine, but no alcohol. Only five are official and they are found in the N. F.

31. Extracts.

Extracts are solid or semi-solid preparations, obtained by exhausting drugs with appropriate solvents and carefully evaporating the solutions to the proper consistence.

The U. S. P. recognizes three kinds of extracts, those of a semi-liquid consistence, those of a pilular consistence, and those evaporated to complete dryness and hence in a powdered form.

Pilular Extracts. By pilular is meant that condition which will allow the extract to be rolled into pills without adhering to the fingers or subsequently losing shape. This condition is rarely met with, nor is it to be especially desired, since the extract is seldom prescribed alone, but usually in combination with something else. The trouble is that some of the extracts are prone to get tough and hard in course of time. These are best retained in proper condition by incorporating with them, while still warm, 10 per cent. of their weight of glycerine.

In the official formulas glucose is directed as the diluent for pilular extracts.

Powdered Extracts. These differ from pilular extracts in that they are dry, fine powders. Both extracts have advantages over each other. The powdered extracts can be more conveniently weighed and much more easily dispensed. When extracts are ordered in ointments, suppositories, etc., the pilular extract should be used.

In the official formulas dried starch and magnesium oxide are directed as the diluent, but permission is given to use other diluents—sugar of milk, powdered licorice, magnesium carbonate, or the finely powdered marc from which the extract was made.

Only one semi-liquid extract is official, namely: Extract Malt.

The extracts are all of definite strength, which see in U. S. P. and N. F.

EXTRACTUM CASCARAE SAGRADAE, U. S. P.

Extract of Cascara Sagrada

Make 30 Gm.

This extract is three times as strong as the drug from which it is made.

Uses: Purgative.

Preparation: Pilulae Aloini, Strychninae et Belladonnae Compositae, N. F.

EXTRACTUM COLOCYNTHIDIS, U. S. P.

Extract of Colocynth

Make 25 Gm.

This extract is four times the strength of the drug from which it is made.

Uses: Active cathartic. The main use is in making the compound extract.

Preparations: Extractum Colocynthidis Compositum, U. S. P. Pilulae Colocynthidis et Hyoscyami, N. F.; Pilulae Colocynthidis Compositae, N. F.

EXTRACTUM COLOCYNTHIDIS COMPOSITUM, U. S. P.

Compound Extract of Colocynth

Make 25 Gm.

This is the only official compound extract. It is a mixture of 16 parts of extract of colocynth, 50 parts of aloes, 5 parts of cardamon seed, 14 parts of resin of scammony, and 15 parts of dried soap.

There is probably no extract any more largely used, especially in the Southern States, where it is generally an ingrdeient along with calomel in prescriptions.

Uses: Laxative and purgative.

Preparations: Pilulae Catharticae Compositae, U. S. P. ; Pilulae Catharticae Vegetabiles, N. F.; Pilulae Antidyspepticae, N. F.; Pilulae Colocynthidis et Podophylli, N. F.; Pilulae Laxative Post Partum, N. F.

EXTRACTUM GENTIANAE, U. S. P.

Extract of Gentian

Make one-tenth of formula.

The Gentian is exhausted with cold water, since all of the bitter valuable principles are soluble in cold water. Hot water increases the yield more than double due to large quantities of pectin compounds being dissolved, but the extract is of inferior quality.

The object of boiling the percolate as directed in the U. S. P. is to coagulate the albuminous matter and remove same by straining. The strained liquid is then evaporated to a pilular consistence whereby we obtain a good smooth extract, perfectly soluble in cold water.

Uses: Bitter tonic. Mainly as pill excipient.

Preparations:

Pilulae Antiperiodicae, N. F.
Pilulae Ferri, Quininae, Aloes, et Nucis Vomicae, N. F.

EXTRACTUM NUCIS VOMICAE, U. S. P.

Extract of Nux Vomica.

Make one-tenth of formula.

Nux Vomica contains a large quantity of fixed oil, which interferes with making a dry, powdered extract.

The official directions in the U. S. P. provide for the removal of this fatty matter by treating the concentrated percolate with successive portions of benzin.

The benzin in removing the fixed oil, dissolves out some of the alkaloidal constituents of the drug, and in order to recover the alkaloids, the mixed benzin solutions are treated in a separator with a mixture of water and diluted sulphuric acid, the acid converts the alkaloids into sulphates, which are soluble in water but not in benzin. The water containing the sulphates is shaken with ammonia and then with portions of chloroform. The ammonia liberates the alkaloids, which are readily dissolved by the chloroform. The chloroform solutions are added to the extract and the whole evaporated to dryness, and in this way the alkaloids dissolved by the benzin are brought back into the extract.

The requirement for Extract of Nux Vomica of the U. S. P. 8th was that it should contain 5 per cent of strychnine.

The present requirement of the 9th U. S. P. is approximately 16 per cent of total alkaloids of Nux Vomica.

Uses: Bitter stomachic and tonic.

Preparations: Pilulae Aloes et Podophylli Compositae, N. F., Pilulae Ferri, Quininae, Aloes, et Nucis Vomica, N. F.; Pilulae Laxative Post Partum, N. F.

32. Resins.

The official Resins are solid preparations of vegetable origin containing those principles which are soluble in alcohol and insoluble in water. In this respect they differ from the alcoholic extracts.

The resins for which a process of manufacture is given are made by exhausting the drug with alcohol and then percipitating the resinous matter from the tincture by the addition of water.

RESINA JALAPAE, U. S. P.

Resin of Jalap

Make one-tenth of formula.

Resin of Jalap occurs in yellow to brown-colored masses or fragments, breaking with a resinous, glassy fracture. As seen in the store it is usually in the form of a powder.

Uses: Purgative.

Preparations: Pilulae Catharticae Compositae, U. S. P.; Pilulae Catharticae Vegetabiles, N. F.

38. Oleoresins.

The official Oleoresins are made by exhausting the drug with ether in a percolator suitable for volatile liquids, and the subsequent evaporation of the menstruum. Oleoresin of cubeb is an exception in that it is made with alcohol.

Six oleoresins are recognized in the U. S. P.

OLEORESINA CAPSICI, U. S. P.

Oleoresin of Capsicum

Make one-tenth of formula.

It will be noticed that in the U. S. P., in the case of all other oleoresins, directs the drug to be percolated to exhaustion. Owing to the large amount of fat in capsicum it is not desirable to carry the percolation to complete exhaustion. The oleoresin shortly after being made deposits granular fat and this should be separated by straining.

Its main use is in making the Capsicum Plaster, U. S. P.

34. Collodions.

Collodions are liquid prepartions for external use. The base of collodions is a solution of pyroxylin in a mixture of alcohol and ether.

Pyroxylin, or soluble gun cotton, is made by treating purified cotton with a mixture of sulphuric and nitric acids.

Three collodions are recognized in the U. S. P. and five in the N. F.

COLLODIUM, U. S. P.

Collodion

Make 50 Cc.

The above is a simple solution of pyroxylin in a mixture of alcohol and ether. The preparation should be made in a perfectly dry bottle. Collodion is the vehicle of Flexible Collodion, which is the vehicle of all the other official collodions.

COLLODIUM FLEXILE, U. S. P.

Flexible Collodion

Make 50 Cc.

The addition of camphor and castor oil to the simple collodion renders it flexible, hence its name.

COLLODIUM CANTHARIDATUM, U. S. P.

Cantharidal Collodion

Make 50 Gm.

The Cantharides is extracted with the acetone to which the glacial acetic acid has been added. (In the 8th. U. S. P. chloroform was used for this purpose). The solvent is distilled off and the residue mixed with the flexible collodion.

Synonyms: Blistering Collodion. Vesicating Collodion.

Uses: Blistering agent, best applied with camel's hair brush.

COLLODIUM SALICYLICI COMPOSITUM, N. F.

Compound Salicylic Collodion

Make 25 Gm.

The above preparation is very similar to many of the liquid corn remedies on the market.

35. Soaps.

When alkali hydroxides are heated with fats or fixed oils complete saponification takes place resulting in a new compound being formed called soap. Hard soaps are made with sodium hydroxide and soft soaps are made with potassium hydroxide.

The U. S. P. recognizes two soaps, Sapo or hard soap and commonly called castile soap, made from sodium hydroxide and olive oil, and Sapo Mollis or soft soap made from potassium hydroxide and cottonseed oil.

SAPO MOLLIS, U. S. P.

Soft Soap

Make 50 Gm.

If the potassium hydroxide is full strength as directed by the U. S. P. no trouble will be experienced in making the soap. The alcohol is used for the purpose of aiding saponification.

Soft soap is commonly called "Green Soap." Formerly the great majority was imported from Germany and was made from green olive oil which gave it a green color. The color has nothing to do with the value of the soap and much of the soft soap today is made with cottonseed oil.

Preparations: Linimentum Saponis Mollis, U. S. P.; Linimentum Saponis Mollis Compositum, N. F.

Uses: Soft soap is used in skin diseases and as a detergent in surgery.

Liquid Soap

Sodium Hydroxide	4 Gm.
Potassium Hydroxide	4 Gm.
Cottonseed Oil	50 Cc.
Alcohol	25 Cc.
Water, sufficient quantity to make	250 Cc.

Dissolve the potassium and sodium hydroxide in about 25 Cc. of water, add the alcohol, and then the cottonseed oil in several portions, shaking vigorously after each addition. When saponification is complete add the remainder of the water previously warmed, in portions, shaking after each addition until a clear solution is obtained.

The above makes a very good liquid soap for use in hotels and other such places. Adding a small amount of compound solution of cresol to the solution gives you a good liquid germicidal soap.

36. Liniments.

Liniments are liquid or semi-liquid preparations made up in a vehicle of alcohol, alcohol and water, a fixed oil, or a volatile oil. They are applied to the skin with friction, and for endermatic medication are superior to other external preparations of a similar kind. The U. S. P. recognizes 8 liniments and the N. F. 9.

LINIMENTUM AMMONIAE, U. S. P.

Ammonia Liniment

Make 50 Cc.

Ammonia Liniment was formerly made with olive oil and cottonseed oil. At the present time it is made with sesame oil.

The olein, which is the chief constituent of the sesame oil is acted upon by the ammonia water forming a soap (ammonium oleate) and glycerin. The liniment should be freshly made when wanted.

Synonym: Volatile Liniment. Hartshorn Liniment.
Uses: Rubefacient in rheumatic pains, etc.

LINIMENTUM CALCIS, U. S. P.

Lime Liniment

Make 50 Cc.

A reaction similar to the one in Ammonia Liniment takes place in the making of this liniment. The linolein of the linseed oil is acted upon by the calcium hydroxide, forming a soap.

This liniment like the above should always be freshly prepared when wanted.

Synonym: Carron Oil.

Uses: Burns and scalds.

LINIMENTUM CAMPHORAE, U. S. P.

Camphor Liniment

Make 50 Cc.

The cottonseed oil is heated in a flask on a water bath, the camphor is then added, the flask stoppered securely, and the camphor is dissolved without further heating.

It is important that the flask or bottle used be entirely free from moisture. The camphor is best dissolved by cutting into very small pieces.

Synonym: Camphorated Oil.

Uses: Camphor Liniment is much used as a counter-irritant, especially in acute bronchitis.

Preparation: Ceratum Camphorae, N. F.

LINIMENTUM SAPONIS, U. S. P.

Soap Liniment

Make 100 Cc.

The official directions for making this liniment differ materially from those of the U. S. P. 8th edition. In the author's experience the old working formula is to be preferred; however, if good, well dried, castile soap is used, a perfect preparation can be obtained.

The liniment is set aside for 24 hours before filtering to allow any sodium palmitate which may be present in the soap, and which is insoluble in the menstruum used, to precipitate, whereby it is filtered out.

Synonym: Liquid Opodeldoc.

Uses: Anodyne and rubefacient, mostly as a vehicle for more active substances.

Preparations: Linimentum Chloroformi, U. S. P.; Linimentum Aconiti et Chloroformi, N. F.

LINIMENTUM SAPONIS MOLLIS, U. S. P.

Liniment of Soft Soap

Make 50 Cc.

This liniment is prepared by dissolving soft soap in alcohol and flavoring with oil of lavender.

Synonym: Tincture of Green Soap.

Uses: As a shampoo for the scalp and in various skin diseases. Often medicated with more active drugs.

LINIMENTUM TEREBINTHINAE, U. S. P.

Turpentine Liniment

Make 50 Gm.

This liniment made from rosin cerate and oil of terpentine is a semi-solid preparation.

Synonym: Kentish's Liniment. Kentish's Ointment.

Uses: Burns and scalds mainly.

LINIMENTUM TEREBINTHINAE ACETICUM, N. F.

Acetic Turpentine Liniment

This preparation is an egg emulsion of turpentine reinforced as a counter-irritant with acetic acid. The oil of lemon is used solely to give odor, but is destroyed entirely by the turpentine, hence is an expensive and useless addition.

Synonym: Linimentum Album. Stokes' Liniment. St. John Long's Liniment.

Uses: A powerful counter-irritant, splendid for stock.

37. Petroxolins.

In the Third Edition of the National Formulary "Liquid Petrox" and "Solid Petrox" were recognized under the official title of "Petrolatum Saponatum Liquidum and Petrolatum Saponatum Spissum" respectively. In the Fourth Edition the list of this class of preparations was increased to twenty and the title changed to Petroxolinum, the synonym being "Petrox."

The base of the Petroxolins consists of liquid petrolatum, oleic acid and ammonia. The oleic acid and ammonia form a soap which mixes to a clear solution with the liquid petrolatum.

The Petroxolins are intended for external application. The Liquid Petrox is used as a vehicle for liquid petroxolins; and the Solid Petrox is used as a vehicle for solid petroxolins.

PETROXOLINUM LIQUIDUM, N. F.

Liquid Petroxolin

Make 50 Gm.

Uses: Vehicle for liquid petroxolins.

PETROXOLINUM SPISSUM, N. F.

Solid Petroxolin

Make 10 Gm.

Uses: Vehicle for solid petroxolins.

38. Nebulae. Sprays.

This class of preparations is official for the first time in the N. F. IV. They are intended to be used by spraying from atomizer or nebulizer. The base used in preparing them is light liquid petrolatum. Formulas are given for five.

NEBULA AROMATICA, N. F.

Aromatic Oil Spray

Make 50 Cc.

The above preparation is used as a spray and is quite largely prescribed by nose and throat specialists. It is practically the same thing as a trade preparation on the market.

39. Oleates.

The Oleates are liquid preparations made by dissolving alkaloids in oleic acid. Oleate of Mercury is an exception, in that it is made from mercuric oxide and is of soft ointment-like consistence.

They are for external use to be applied by rubbing and intended to produce systemic effect, being more readily absorbed than any other external preparation.

Only one Oleate is official in the U. S. P. while five are recognized in the N. F.

OLEATUM HYDRARGYRI, U. S. P.

Oleate of Mercury

Make 10 Gm.

Made from yellow oxide of mercury, oleic acid and alcohol. The alcohol is for the purpose of dividing the mercury salt, and it also aids the reaction with the oleic acid.

Care must be taken that the preparation be not heated above 50 degrees C as the salt is apt to be reduced to metallic mercury.

All contact with metallic utensils must be avoided.

Uses: Rubbed into the skin as an antisyphilitic, alterative, etc.

Preparations: Massa Hydrargyri, U. S. P.; Unguentum Hydrargyri, U. S. P.

40. Unguenta. Ointments.

Ointments are solid preparations for external use to be applied by friction. They are of such consistence that they generally melt at the temperature of the body.

Therapeutically, ointments may be divided into three classes: (a) those intended to act only upon the outer skin; (b) those intended to penetrate into the skin; (c) those intended to produce systemic effect by penetrating into and through the skin. For the first class, petrolatum is the base usually employed; for the second class lard is the base usually employed; and for the third class wool fat is the best base.

The official ointments are made in three ways, by fusion, by simple incorporation, while a third, nitrate of mercury, is made by chemical action.

ADEPS BENZOINATUS, U. S. P.

Benzoinated Lard

Make 100 Gm.

Uses: Ointment base. The benzoin prevents the lard from becoming rancid.

UNGUENTUM ZINCI OXIDI, U. S. P.

Ointment of Zinc Oxide

Make 25 Gm.

Ointment of Zinc Oxide is probably the most generally used of all the ointments. It is very essential that the best zinc oxide be used in its preparation.

Uses: Various skin diseases, as eczema, etc.

UNGUENTUM BELLADONNAE, U. S. P.

Belladonna Ointment

Make 10 Gm.

When extracts are ordered in ointments, the pilular form should be used, as they make smoother ointments. Since both the pilular and powdered extract of belladonna are official, the U. S. P. directs the pilular in the formula.

The wool fat is used to aid absorption.

Uses: Sedative and anodyne.

UNGUENTUM HYDRARGYRI OXIDI FLAVI, U. S. P.

Ointment of Yellow Mercuric Oxide

Make 10 Gm.

The water is used for the purpose of reducing the mercury salt to a fine powder. The hydrous wool fat takes up the water and also aids absorption of the ointment.

The ointment is very largely used in various skin diseases, and in a diluted form it is used for the eye lids. Care should always be taken to see that the oxide is in a fine powder and free from gritty particles.

Uses: Antiseptic and germicide.

UNGUENTUM HYDRARGYRI AMMONIATI, U. S. P.

Ointment of Ammoniated Mercury

Make 10 Gm.

The above is a 10 per cent ointment of ammoniated mercury made up in a base consisting of five parts of petrolatum and four parts of hydrous wool fat.

Synonym: White Precipitate Ointment.

Uses: Stimulant and parasiticide in ringworm, eczema, etc.

UNGUENTUM AQUAE ROSAE. U. S. P.

Ointment of Rose Water

Make 50 Gm.

In making the above ointment it is essential that the sodium borate be completely dissolved in the rose water, and that the solution be warmed to the temperature of the melted fat. This is for the purpose of preventing sudden chilling, which would cause the ointment to be granular. Stirring rapidly and continuously, as directed, is necessary to produce a smooth, creamy ointment.

The borax gives the ointment its white appearance, but since the ointment is frequently used as a vehicle for other medicinal agents, the borax may interfere with this by causing a chemical change to take place. In such cases the borax should be omitted.

Synonym: Cold Cream.

Uses: For chapped hands and face.

UNGUENTUM PICIS LIQUIDAE, U. S. P.

Tar Ointment

Make 25 Gm.

The above ointment is made by fusion, containing 50 per cent of tar in a vehicle of yellow wax and lard.

Uses: Very largely employed in various skin diseases.

UNGUENTUM SULPHURIS COMPOSITUM. N. F.

Compound Sulphur Ointment

Make 25 Gm.

Synonym: Wilkinson's Ointment. Hebra's Itch Ointment.

Uses: In the treatment of itch.

UNGUENTUM HYDRARGYRI NITRATIS, U. S. P.

Ointment of Mercuric Nitrate

Make 50 Gm.

If the directions are carefully followed no trouble will be experienced in making the above ointment.

Two chemical changes take place in making the ointment. When lard is heated with nitric acid, it undergoes oxidation. The olein of the lard is converted into a solid compound, known as elaidin. This is the first chemical reaction. The second takes place between the mercury and the nitric acid, forming nitrate of mercury.

The incorporation of the mercuric nitrate with the elaidin is simply a mechanical mixture.

If the preparation has been properly made as directed in the U. S. P. a bright lemon-yellow ointment will be obtained.

All contact with metallic utensils should be avoided.

Synonym: Citrine Ointment.

Uses: Active parasiticide and antiseptic, usually diluted with lard.

UNGUENTUM HYDRARGYRI, U. S. P.

Mercurial Ointment

Make 50 Gm.

The oleate of mercury serves the double purpose of extinguishing the metallic mercury and also adds to the efficiency of the ointment.

The preparation of the ointment is simply a mechanical operation and the mercury can be easily recovered by the simple assay process given in the U. S. P.

Formerly mercurial ointment was known as "Blue Ointment," but this name is now applied to the official diluted mercurial ointment.

The above ointment contains 50 per cent. of metallic mercury, while blue ointment contains approximately 30 per cent.

Uses: Antisyphilitic and parasiticide.

Preparation: Unguentum Hydrargyri Dilutum, U. S. P.

41. Inunctions.

Two preparations made with hydrous wool fat are recognized in the N. F., under the name of inunctions, namely menthol inunction and compound menthol inunction.

The compound menthol inunction is practically the same as the analgesic balms on the market.

42. Cerates.

Cerates differ from ointments in containing some wax, resin, or oleoresinous substance, hence they are stiffer than ointments.

Cerates are usually spread upon linen or soft leather and applied as dressings.

Three cerates each are recognized in the U. S. P. and N. F.

CERATUM CAMPHORAE, N. F.

Camphor Cerate

Make 50 Gm.

The above cerate is made from camphor liniment, white wax, white petrolatum, and benzoinated lard. In some localities it is a very popular preparation.

Uses: Applied to throat and chest in colds.

CERATUM RESINAE COMPOSITUM, N. F.

Compound Rosin Cerate

Make 50 Gm.

This cerate, made from rosin, yellow wax, prepared suet, turpentine, and linseed oil, is prone to get tough and hard if kept on hand for some time. Liquid petrolatum has been suggested instead of the linseed oil. While it would prevent the preparation from becoming tough, it is doubtful if the cerate would be as good medicinally.

Synonym: Deshler's Salve.

Uses: Stimulating dressing.

CERATUM CANTHARIDIS, U. S. P.

Cantharides Cerate

Make 50 Gm.

The object of moistening the cantharides for 48 hours with the mixture of glacial acetic acid and oil of turpentine is for the purpose of extracting the cantharidin and to facilitate the subse-

quent solution in the fats. Formerly liquid petrolatum was used instead of the turpentine and acetic acid.

The yellow wax, rosin, and benzoinated lard are melted together and strained through muslin, the macerated cantharides added, and the mixture kept in a liquid condition by heating on a water bath until reduced to the proper weight.

A certain amount of the melted mixture is always lost in the melting and straining and it will be found necessary to add more lard, at least 10 per cent more than is ordered in the formula.

Synonym: Blistering Cerate. Blistering Ointment. Vesicating cerate.

Uses: Vesicant, to be spread on cloth or adhesive plaster.

Preparation: Emplastrum Cantharidis.

CAMPHOR ICE

Expressed Oil of Almond	2.00
Cetaceum	4.00
Cera Alba	2.00
Camphorae	.50

Melt the cetaceum and wax, add the oil and then the camphor.

43. Glycerogelatins.

Glycerogelatins are soft masses, melting at the body temperature, composed of gelatin, glycerin, water, and a medicament suitable for application in dermatological practice. They are prepared with Glycerinated Gelatin (U. S. P.) as the vehicle.

Four are official in the N. F.

GELATINUM GLYCERINATUM, U. S. P.

Glycerinated Gelatin

Make 20 Gm.

Uses: Vehicle.

GLYCEROGELATINUM ZINCI DURUM, N. F.

Firm Zinc Glycerogelatin

Make 10 Gm.

Uses: Protective and astringent.

GLYCEROGELATINUM ZINCI MOLLE, N. F.

Soft Zinc Glycerogelatin

Make 10 Gm.

Uses: Protective and astringent.

44. Pastae Dermatologicae. Dermatologic Pastes.

Dermatologic Pastes are medicaments for external use, employed in the practice of dermatologists. They are ointment-like mixtures of starch, dextrin, zinc oxide, sulphur, calcium carbonate or other medicinal substances made into a paste with glycerine, soft soap, petrolatum, lard or other fats and medicated with antiseptic or astringent agents.

PASTA BETANAPHTHOLIS, N. F.

Betanaphthol Paste

Make 10 Gm.

Synonym: Lassar's Naphthol Paste.

Uses: Antiseptic and parasiticide.

PASTA RESORCINOLIS MITIS, N. F.

Mild Resorcinol Paste

Make 10 Gm.

Synonym: Lassar's Mild Resorcinol Paste.

Uses: Locally in mild skin diseases.

PASTA ZINCI MOLLIS, N. F.

Soft Zinc Paste

Make 10 Gm.

Synonym: Unna's Soft Zinc Paste.

Uses: Astringent.

45. Stili Dilubiles. Paste Pencils.

Preparations in the form of pencils for the direct application of medicinal agents. Only one paste pencil is official.

STILI ACIDI SALICYLICI DILUBILES, N. F.

Salicylic Acid Pencil

Make 1/10 of the formula.

46. Cataplasms.

Cataplasms or poultices have long been in use as household remedies. Flaxseed meal, powdered elm bark, mustard, etc., are some of the remedies used. Only one cataplasm is recognized, namely the cataplasm of kaolin.

CATAPLASM KAOLINI, N. F.

Cataplasm of Kaolin

Make 50 Gm.

Cataplasm of Kaolin is very similar to a popular proprietary on the market.

It should be preserved in air-tight containers to prevent absorbing moisture from the air.

Uses: Antiphlogistic.

47. Emplastrum. Plasters.

Plasters are preparations intended for external application to be applied by being spread on some suitable material.

The plasters are solids at ordinary temperature and must be spread with the aid of heat.

The U. S. P. recognizes 4 spread plasters, and 3 plaster masses. The N. F. recognizes 2 plaster masses.

EMPLASTRUM PLUMBI, U. S. P.

Lead Plaster

Make one-fortieth of formula.

When the olive oil and lard are melted and mixed with the lead oxide and water, and boiled, chemical reaction takes place and a lead soap (lead oleate) is formed, glycerin is liberated, which is removed by washing with warm water. The presence of water is essential to facilitate the reaction between the lead oxide and the fats; it should be added from time to time to restore that lost by evaporation. The mass is finally freed from water by kneading on a slab.

It should be rolled into cylinders and wrapped in parraffin paper to protect it from the air.

Synonym: Diachylon Plaster.

Uses: Mainly in the preparation of other plasters.

Preparations: Unguentum Diachylon, U. S. P.; Emplastrum Resinae, U. S. P.; Emplastrum Saponis, N. F.

Spread Plasters.

Spread a plaster of Cerate of Cantharides for the chest.

Spread one for the ear.

Spread one for the breast.

Make your own pattern for the above out of cardboard.

48. Mullae. Salve Mull. Steatins.

Mulls are ointments of high fusing points, containing the desired medicinal agent, and spread on soft muslin or mull, in a manner similar to the ordinary spread plasters. Four are official in the N. F.

MULLA CREOSOTI SALICYLATA, N. F.

Salicylated Creosote Mull

Make 10 Gm.

Spread as directed in the N. F.

49. Suppositories.

Suppositories are solid, medicinal preparations intended for introduction into one of the orifices of the body. The base employed in making them must be some substance that will melt at body temperature and there is nothing better for this purpose than oleum theobromatis (cocoa butter). Glycerinated gelatin is also largely employed. The size and shape not only depends upon the particular use to be made of the suppository, but also upon the base employed.

When suppositories are intended for the urethra or nose they are usually termed bougies. When not otherwise directed, a rectal suppository is intended.

Two pages are given over to suppositories in the U. S. P. which should be carefully read. Only one suppository is official in the U. S. P., namely glycerin suppositories. The N. F. recognizes suppositories of boroglycerin.

SUPPOSITORIA GLYCERINI, U. S. P.

Suppositories of Glycerin

Make 5.

Chemical reaction takes place between the sodium carbonate and the stearic acid and is konwn to be complete when the evolution of carbon dioxide ceases.

The suppositories when finished should be translucent. If they are white it indicates that chemical reaction was not complete.

℞

Acidi Tannici ---------- 1.00
Ol. Theobromatis q—s
M. Ft. suppos. pro, recto, iii no.
Make by hand.

℞

Plumbi Acetatis ---------- 0.65
Opii Pulvis ---------- 0.20
Olei Theobromatis q—s
M. Ft. suppos. pro, recto, iii no.
Make by hand.

℞

Iodoformi ---------- 1.00
Ol. Theobromatis q—s
M. Ft. suppos. pro. urethra iii no.
Make by hand and by compression.

℞

Extracti Belladonnae ---------- .650
Morphinae Sulphatis ---------- 065
Olei Theobromatis q—s
M. Ft. suppos. pro. vagina iii no.
Make by hand and by compression.

℞

Chloral Hydrate ---------- 1.00
Ol. Theobromatis q—s
M. Ft. suppos. pro. recto. iii no.
Make by hand.

℞

Thymol	1.00
Boric Acid	2.00
Glycerin	18.00
Water	10.00

Glycerinated Gelatin q—s
M. Ft. suppos. pro. vagina iii no.
Cast into mould.

50. Emulsions.

Emulsions are milk-like preparations containing a fixed or volatile oil, ether, chloroform, oleoresinous or similar substance in suspension in water by means of an emulsifying agent.

There are a number of natural emulsions, as milk, yolk of egg, and the milk juice of certain plants. Milk is considered the most perfect emulsion.

Emulsions prepared by the pharmacist may be divided into natural and artifical. To the natural class belong those which are made from seed or gum resins, by triturating with water, the oil or resin, and the gum or emulsifying agent, having been provided by nature. Artificial emulsions are those which require the addition of some emulsifying agent, and are by far the most common emulsions.

Emulsifying Agents. An emulsifying agent is a substance which keeps the oil, oleoresin, etc.. in suspension. The agents employed are acacia. tragacanth, yolk of egg, glycerite of yolk of egg, and irish moss mucilage. These are the most commonly used and acacia is considered by far the best. There are some commercial emulsifiers on the market and are said to contain casein, saponin, etc.

Making Emulsions. Emulsions of fixed oils oleoresins, etc., should be prepared in a mortar. Chloroform, ether and volatile oil emulsions are best prepared in a bottle.

A wedgewood or porcelain mortar should be used; never attempt to make an emulsion in a glass mortar.

Emulsions of fixed oils may be prepared by triturating the oil with the acacia in a perfectly dry mortar and then adding a portion of the water to form the primary emulsion, or they may be prepared by first making a mucilage of acacia and gradually adding the oil to the mucilage triturating briskly to form the emulsion. The first method is usually employed.

In making an emulsion by the first method a good rule to keep in mind is as follows,— Use not less than one-fourth nor more than one-half as much acacia as oil, and twice as much water as acacia, for making the primary emulsion. Place the powdered acacia in a perfectly dry mortar, then add the oil and triturate well to a smooth mixture. Now add the water all at once, and stir briskly until a perfect emulsion results, which is known by a creamy appearance. This is then diluted with the remainder of the water.

Emulsions of volatile oils and ethers require more gum than fixed oils. Not less than half as much gum as volatile liquid should be used, and twice as much water as gum. Emulsions of volatile oils are more permanent when made with the addition of some fixed oil added to the volatile oil; such emulsions are best made in a mortar. Oil of turpentine is an exception, and unites with a very small amount of acacia and water to form an emulsion.

Points to Be Remembered. Never measure water in an oily graduate or the oil in a wet graduate. It will more than likely break the emulsion.

If the primary emulsion should fail, do not attempt to save it by the addition of more gum. If you have been careful and used the right proportions of gum and water, the addition of more gum will only increase the density, but will not save a "cracked" emulsion.

When salts are ordered in emulsions, they should be dissolved in water and added lastly after the primary emulsion has been diluted. The same thing applies to tinctures and other alcoholic liquids. If these are added directly to the undiluted primary emulsion, they may cause it to break.

The National Formulary gives a list of flavoring agents for emulsions.

EMULSUM AMYGDALAE, U. S. P.

Emulsion of Almond

Make 100 Cc.

The sweet almonds are blanched by dropping them into hot water and rubbing off the outer coating. While the almonds triturated with water will make an emulsion, in the formula the preparation is fortified by the addition of acacia and sugar, which makes a more permanent preparation.

The preparation is used solely as a vehicle for other mixtures, and should always be freshly prepared.

Synonym: Milk of Almond.

Uses: Vehicle.

EMULSUM OLEI RICINI, N. F.

Emulsion of Castor Oil

Make 50 Cc.

The above is a 35 per cent castor oil emulsion, flavored with tincture of vanilla.

Uses: Cathartic.

EMULSION OLEI TEREBINTHINAE, U. S. P.

Emulsion of Oil of Turpentine

Make 50 Cc.

If the directions are followed no trouble whatever is experienced in making the above emulsion.

EMULSUM OLEI MORRHUAE, U. S. P.

Emulsion of Cod Liver Oil

Make 50 Cc.

The above is a very palatable preparation of cod liver oil. The U. S. P. gives permission to replace methyl salicylate with any other flavoring desired.

EMULSUM OLEI MORRHUAE CUM HYPOPHOSPHITIBUS, N. F.

Emulsion of Cod Liver Oil with Hypophosphites

Make 50 Cc.

EMULSUM OLEI MORRHUAE CUM VITELLO, N. F.

Emulsion of Cod Liver Oil with Egg

Make 50 Cc.

The above is an egg emulsion of cod liver oil and quite largely used.

EMULSUM PETROLATI, N. F.

Emulsion of Petrolatum

Make 50 Cc.

This emulsion is similar to some of the trade preparations of petroleum emulsions on the market.

EMULSUM CHLOROFORMI

Chloroform Emulsion

Chloroform	4 Cc.
Expressed oil of almond	6 Cc.
Tragacanth, in very fine powder	1.5 Gm.
Water, a sufficient quantity to make	100 Cc.

Introduce the tragacanth into a perfectly dry bottle of sufficient capacity, add the chloroform and shake the bottle thoroughly so that every part of the surface may become wet. Then add about 25 Cc. of water, and incorporate it by vigorous shaking. Next add the expressed oil of almond, in several portions, shaking after each addition, and when the oil has been thoroughly emulsified, add enough water, in divided portions, shaking after each addition, until the product measures 100 Cc.

The above emulsion was formerly official in the U. S. P. and is still sometimes prescribed.

EMULSUM COPAIBAE

Emulsion of Copaiba

Copaiba	15 Cc.
Potassium bicarbonatis	2 Gm.
Tinctura Lavendulae Comp.	2 Cc.
Acacia, q—s Aqua q—s	60 Cc.

Make Emulsion.

In making follow the rule given for making oil emulsions.

℞

Camphorae	0.50
Acacia q—s Syrupi	20.00
Aqua q—s	100.00

M. Ft. emulsum.

The camphor should first be dissolved in some bland oil, like expressed oil of almond, or a corresponding amount of the official liniment of camphor used, which in this case would be 2.5 Cc. Then emulsify as you would other fixed oils.

℞

Salol	2.00
Acacia	2.00
Syrup Tolu	10.00
Aqua q—s	50.00

M. Ft. emulsum.

The salol should be dissolved in about 4 Cc. of expressed oil of almond and emulsified.

51. Pills.

Pills are solid bodies, of an ovoid or globular shape, for internal administration. Large pills are called "Boluses" and are used in veterinary practice, small pills are frequently called "Granules," and very small pills are sometimes called "Parvules."

The advantages of giving medicines in pill form lie in the small bulk to which the medicine is reduced and in the disguise of nauseous and bitter drugs, as the pill is swallowed without mastication.

In making pills the first step is the formation of the ingredients into a proper mass, which necessitates the careful selection of the excipient.

Excipients. It is impossible to select any one substance as an excipient that is suitable for all pill masses. They may be divided into three distinct classes:

1. Those substances which act as solvents and develop adhesiveness. To this class belong water, alcohol, diluted alcohol, etc.

2. Those which impart adhesiveness. To this class belong syrup, honey, glucose, confection of rose, mucilage of tragacanth, extracts, etc. The great majority of drugs prescribed in pill form do not possess adhesive properties, therefore this class of excipients are far more largely used than all others.

3. This class of excipients are known as absorbent excipients. They are added to give firmness when the mass is too soft. Starch, magnesium carbonate, licorice root, elm bark, marshmallow root, etc., are the most common.

There is a fourth class of substances prescribed in pill form which cannot be made into a mass with the usual excipients. Nitrate of silver, chloride of gold, permanganate of potash, etc., being readily reducible substances, must be massed with something that will not cause decomposition. A mixture of petrolatum, paraffin and kaolin is one of the best excipients for pills of this character.

Conspergatives. The pill mass quite often adheres to the slab and fingers; this is prevented by using a dusting powder, called a conspergative. The substances most commonly used for this purpose are starch, lycopodium, licorice, purified talc, etc.

Enteric Pills. These are pills coated with some substance that will not dissolve in the stomach, but will dissolve in the fluids of the intestines. At the prescription counter salol is usually used for this purpose. At least three coatings should be applied. The salol is melted on a water bath, the pills added and the dish rotated; a second and third coating is applied in the same manner.

PILULAE ALOES, U. S. P.

Pills of Aloes

Make 20 Pills.

Uses: Laxative and cathartic.

PILULAE CATHARTICAE COMPOSITAE, U. S. P.

Compound Cathartic Pills

Make 20 Pills.

Uses: Carthartic, especially for the liver.

PILULAE FERRI CARBONATIS, U. S. P.

Pills of Ferrous Carbonate

Make 20 Pills.

A chemical change takes place between the ferrous sulphate and the potassium carbonate forming ferrous carbonate. The sugar used retards the oxidation of the iron salt.

The U. S. P. allows the use of monohydrated sodium carbonate in place of the potassium carbonate. (See U. S. P.)

Synonym: Chalybeate Pills. Blaud's Pills. Ferruginous Pills.

PILULAE FERRI IODIDI, U. S. P.

Pills of Ferrous Iodide

Make 10 Pills.

The reaction takes place between the reduced iron and the iodine, forming ferrous iodide, and is known to be complete when the reddish tint has disappeared. An excess of iron over iodine is used to prevent the liberation of iodine. The pills are given a resinous coating of tolu to prevent oxidation.

Synonym: Blancard's Pills.

Uses: Alterative.

℞

Quininae Sulphatis_____2.00 Gm.
Make into 15 pills.

Quinine pills should always be white. Glucose may be used as the excipient, or tartaric acid and simple syrup may be used.

Starch is the proper dusting powder.

℞

Potassium Permanganatis
Quininae Sulphatis
Ferri Reducti aa_____1.00 Gm.
Make 12 pills.

Kaolin or talc with petrolatum and paraffin is the proper excipient.

Avoid contact with metallic utensils.

℞

Quininae Sulphatis
Ferri Reducti aa_____ 2.00 Gm.
Arsenic Trioxidi
Strychninia Sulphatis aa_____ .032 Gm.
Mix and make into a mass and divide into 30 equal parts and envelop in gelatin capsule.

Select your excipient.

℞

Pilulae Camphorae aa_____ .130
No. x

Select your excipient.

52. Masses.

The U. S. P. recognizes two masses, Massa Ferri Carbonatis and Massa Hydrargyri. The N. F. recognizes Massa Copaibae. The only difference between the Masses and Pills is that the Masses are not finished up into pill form. The Masses are sometimes prescribed alone, but as a rule are constituents of other pill Masses.

MASSA FERRI CARBONATIS, U. S. P.

Mass of Ferrous Carbonate

Make 20 Gm.

This is one of many preparations of ferrous carbonate, and s made by the reaction of monohydrated sodium carbonate on ferrous sulphate.

$FeSO_4$	+	Na_2CO_3	=	$FeCO_3$	+	Na_2SO_4
Ferrous sulphate		Sodium carbonate		Ferrous carbonate		Sodium sulphate

The solution of the iron salt should be poured slowly into the sollution of the sodium salt and the flask rotated until all the carbon dioxide has escaped. Syrup is ordered added to the iron solution and also to the water used in washing the precipitate to prevent oxidation of the iron.

The preparation when finished is a very soft, dark greenish mass, too soft to be prescribed alone, and needs the addition of some absorbent powder.

The mass should be well protected in closed containers. The U. S. P. requires it to contain not less than 35 per cent of ferrous carbonate.

Synonym: Vallets Mass.

Uses: Tonic in anemia and chlorosis.

MASSA HYDRARGYRI, U. S. P.

Mass of Mercury

Make 25 Gm.

Mass of Mercury is one of the oldest of all pill masses. The preparation contains 33 per cent of metallic mercury and has long been used as a purgative for the liver.

Synonym: Blue Mass. Blue Pill.

Uses: Laxative in small doses, purgative in large doses.

Powdered Blue Mass is quite frequently prescribed and can be made as follows:

Mercury	33 Gm.
Oleate of Mercury	1 Gm.
Glycyrrhiza	10 Gm.
Althea	15 Gm.
Sugar of Milk	41 Gm.

Alcohol quantity sufficient.

The mercury is first triturated with oleate of mercury and then with finely powdered glycyrrhiza and althea, a small quantity of alcohol being added to keep in moist condition. The mass being made, the alcohol is allowed to evaporate, when it is mixed with sugar of milk, the whole reduced to a uniform powder and passed through a fine sieve. A drop of oil of rose may be added to give the flavor.

53. Tablets.

Tablets are of two kinds, those made from dry material in a granular form by compression and known as compressed tablets, and those made from moist material in a mould and known as tablet triturates.

Compressed Tablets. In making compressed tablets the ingredients, if more than a single substance, are first thoroughly mixed, then moistened with the proper moistening agent, which may be water, alcohol, dilute alcohol, or some other liquid, and passed through a number 10 to 20 sieve. The granules after thorough drying are now ready to be compressed. In most cases it is necessary to add to the granules some lubricant to prevent the tablet from sticking to the die. Liquid petrolatum is usually best for this, other lubricants are boric acid, talc, lycopodium, etc.

Only one tablet is recognized in the U. S. P., namely, Poison Tablets of Corrosive Mecuric Chloride.

Tablet Triturates. These are made from finely powdered material, the diluent for active constituents being sugar of milk or finely powdered cane sugar, or a mixture of the two, moistened with alcohol, dilute alcohol, alcohol and syrup, etc., and pressing the moist material into the tablet mould.

Recipe:

Strychnine Sulphate	1 gr.
Sugar of Milk	50 gr.

Moisten with alcohol and press into No. 10 Whitall Tatum Mould.

Label 1/50 grain Strychnine Tablet Triturates.

Recipe:

Compound Acetanilide Powder---------- 50 gr.
Make 10 Tablets.
Mix the Compound Acetanilide Powder with 10 grains of finely powdered sugar and 5 grains of white dextrin, granulate and lubricate with paraffin oil.
Compress in machine.
Label Headache Tablets.

Recipe:

Calomel
Sodium Bicarbonate aa---------- 25 gr.
Make 25 tablets.
Mix thoroughly with 5 grains each of finely powdered sugar and dextrin, granulate, lubricate, and compress in machine.
Label 1 grain calomel and soda tablets.

Recipe:

Quinine Sulphate
Ferri Sulphate aa---------- 60 gr.
Aloin ---------- 6 gr.
Strychnine Sulphate
Arsenic Trioxide aa---------- 1 gr.
Make 60 tablets.
Mix and granulate. Use Lycopdoium as lubricant.
Compress in machine.
Label Strychnated Iron Tablets.

54. Troches. Lozenges.

Formula for the preparation of five different troches are recognized in the U. S. P. and nine in the N. F. Troches are not intended to be swallowed; as their action is local, they dissolve slowly in the mouth.

TROCHISCI AMMONII CHLORIDI, U. S. P.

Troches of Ammonium Chloride

Make 20 Troches.

Troches of Ammonium Chloride are used to relieve inflamation of the throat and lungs.

55. Granular Effervescent Salts.

Effervescent salts are preparations in a granular form containing the active ingredient mixed with citric and tartaric acid and sodium bicarbonate. When mixed with water carbon dioxide is given off and it is drunk as an effervescent draught.

The U. S. P. gives directions for the preparation of three effervescent salts, but does not recognize them as a class. The N. F. recognizes 7 granular effervescent salts and they are listed as a class.

On a large scale these salts are made by placing the mixed powders in an oven and when they have become moist the mixture is passed through a number 6 sieve, the granules dried at a low temperature and transferred to air tight containers. They can also be made this same way on a small scale, but where an oven is not available, they can be made by moistening the mixed powders with alcohol and rubbing through the sieve to obtain the granules. By many this process is preferred.

SODII PHOSPHAS EFFERVESCENS, U. S. P.

Effervescent Sodium Phosphate

Make 25 Gm.

Mix the ingredients as directed in the U. S. P. and moisten with alcohol and pass through No. 6 sieve, and allow the granules to dry spontaneously.

Uses: Purgative and laxative.

In addition to granular effervescent salts, there are many proprietary effervescent powders on the market. The preparation below will serve as an example.

Saline Laxative.

Potassium Sulphate	10 Gm.
Sodium Chloride	90 Gm.
Sodium Bicarbonate	180 Gm.
Sodium Sulphate Dried	220 Gm.
Magnesium Sulphate Dried	125 Gm.
Sodium Phosphate Dried	250 Gm.
Tartaric Acid Dried	125 Gm.

Mix thoroughly and put up in screw top bottle.

56. Elixirs.

Elixirs are aromatic sweet preparations, containing alcohol in varying proportion. The U. S. P. recognizes only two elixirs, aromatic elixir and elixir of licorice, which are used solely as vehicles. The N. F. recognizes 76 elixirs, most of which can be made extemporaneously.

Many of the elixirs could well be deleted from the N. F., and,

on the other hand, there are some few not official that should be listed in the book.

For coloring acid or neutral elixirs red the N. F. recommends Tincture of Cudbear for bright red and Compound Tincture of Cudbear for brownish red; for alkaline elixirs the coloring agent s solution of carmine.

ELIXIR AROMATICUM, U. S. P.

Aromatic Elixir

Make 200 Cc.

Simple Elixir as it is more commonly called is used solely as a vehicle for other elixirs and preparations. The N. F. recognizes Elixir Aromaticum Rubrum which is the U. S. P. elixir colored red with cudbear.

ELIXIR PEPSINI ET RENNINI COMPOSITUM, N. F.

Compound Elixir of Pepsin and Rennin

Make 100 Cc.

This preparation was formerly official as Essence of Pepsin and is similar to the many different trade preparations on the market.

ELIXIR TERPINI HYDRATIS, N. F.

Elixir of Terpin Hydrate

Make 100 Cc.

Uses: Acute and chronic bronchitis.

Elixir of Lactated Pepsin.

No formula is given in the National Formulary for making this preparation. It is quite largely used, its main use being as a vehicle.

It may be made by the formula given below.

Pepsin (Scales)	30.00 Gm.
Lactic Acid	1.00 Cc.
Hydrochloric Acid	2.00 Cc.
Glycerine	250.00 Cc.
Alcohol	200.00 Cc.

Oil of Orange	2.00 Cc.
Cudbear	1.00 Gm.
Talc q—s	
Aqua q—s	1000.00 Cc.

Misce Secundum Artem.

Elixir of the Phosphates of Iron, Quinine, and Strychnine.

No formula is given for this preparation and it is one of the most widely used preparations that we have.

Soluble Ferric Phosphate	17.50 Gm.
Potassium Citrate	5.00 Gm.
Quinine	8.75 Gm.
Strychnine	.275 Gm.
Phosphoric Acid	2.00 Cc.
Alcohol	200.00 Cc.
Glycerin	200.00 Cc.
Compound Spirit Orange	10.00 Cc.
Purified Talc	30.00 Gm.
Aqua Distilled q—s	1000.00 Cc.

Dissolve the quinine and strychnine in the the alcohol, and add 100 Cc. of water to which has been added the phosphoric acid; add to this the compound spirit of orange. Dissolve the soluble ferric phosphate and the potassium citrate in 100 Cc. of warm water; to this solution add the glycerine and then the alkaloidal solution and sufficient water to make 1000 Cc. Mix the talc with the liquid and filter, returning the first portion of the filtrate until a clear liquid is obtained. Lastly wash the filter with a mixture of one volume of alcohol and four volumes of water until the product measures 1000 Cc.

The above formula was suggested by George M. Beringer and has been used by the author for a number of years with perfect satisfaction in every way.

The preparation should be stored and dispensed in amber bottles to protect it from the light.

57. Ampoule. Ampuls.

Formerly an Ampul was understood to be considered a small glass container for holding hypodermic solutions, now these are made in all sizes and shapes and are used for holding many solutions other than those for hypodermic use.

Ampuls are filled in different ways, by gravity flow, by pressure, and by vacuum suction, the ends being sealed by fusing in a flame.

Ampul filling of sterile solutions should be practiced by the student in the laboratory.

58. Miscellaneous Preparations.

In the preceding pages we have considered practically all of the different classes of preparations. There remain some preparations to be discussed which do not fall in any of these classes. These we shall group as miscellaneous.

ACIDUM NITROHYDROCHLORICUM, U. S. P.

Nitrohydrochloric Acid

Make 50 Cc.

This acid is made by mixing 18 parts of nitric acid with 82 parts of hydrochloric acid in a capacious glass vessel. When effervescence has ceased, it is poured into dark amber-colored glass-stoppered bottles, which must not be more than half filled, and must be kept in a cool place.

Synonym: Nitromureatic Acid. Aqua Regia.

Uses: Hepatic Stimulant.

Why does the U. S. P. direct to store the acid in half filled bottles? Gas develops and there must be room for this gas.

What note does the U. S. P. give regarding the dispensing of this acid? See U. S. P.

ACIDUM SULPHURICUM AROMATICUM, U. S. P.

Aromatic Sulphuric Acid

Make 50 Cc.

Synonym: Elixir of Vitriol.

Uses: Tonic and astringent.

ACIDUM HYDRIODICUM DILUTUM, U. S. P.

Diluted Hydriodic Acid

Make 100 Gm.

While diluted hydriodic acid is an alterative, its main use

is in making the Syrup of Hydriodic Acid. The syrup does not keep well and by having the acid on hand it is an easy matter to make the syrup on short notice.

The acid itself does not keep any too well and the directions of the U. S. P. should be observed in preserving it.

Two reactions take place in making the acid, which are as follows:

KI	+	$H_2C_4H_4O_6$	=	HI	+	$KHC_4H_4O_6$
Potassium iodide		Tartaric acid		Hydriodic acid		Potassium acid tartrate
KPH_2O_2	+	$H_2C_4H_4O_6$	=	HPH_2O_2	+	$KHC_4H_4O_6$
Potassium hypophosphite		Tartaric acid		Hypophosphorous acid		Potassium bitartrate

The precipitate formed is Potassium Bitartrate (Cream of Tartar). It is necessary to precipitate this salt in order that the solution of hydriodic acid can be seperated. The hydriodic acid is easily oxidized by the air, liberating iodine, and the hypophosphorous acid is used to prevent this oxidation.

The U. S. P. states that the acid should not be dispensed if it contains free iodine.

MISTURA GLYCYRRHIZAE COMPOSITA, U. S. P.

Compound Mixture of Glycyrrhiza

Make 100 Cc.

Synonym: Brown Mixture.

Uses: Cough Medicine.

MISTURA PECTORALIS, STOKES, N. F.

Stokes' Expectorant

Make 100 Cc.

Uses: Expectorant.

MISTURA CHLORALIS ET POTASSII BROMIDI COMPOSITA, N. F.

Compound Mixture of Chloral and Potassium Bromide

Make 100 Cc.

This preparation much used as a hypnotic and sedative is similar to a trade preparation on the market.

MISTURA SPLENETICA, GADBERRY

Gadberry's Spleen Mixture

Gadberry's Spleen Mixture was at one time official in the National Formulary. In view of the fact that it is quite largely used in some localities, the formula is given below.

Ferrous Sulphate	14 Gm.
Quinine Sulphate	14 Gm.
Nitric Acid	14 Cc.
Potassium Nitrate	42 Gm.
Water, a sufficient quantity to make	1000 Cc.

Triturate the ferrous sulphate, reduced to powder, with the nitric acid previously mixed with an equal volume of water. When effervescence has ceased, warm the mixture gently, until it no longer evolves visible vapors of a yellowish tint. Then add to it the quinine sulphate, the potassium nitrate, and lastly, enough water to make 1000 Cc. When solution has been effected, filter.

Uses: Antimalarial.

FERRI CARBONAS SACCHARATUS, U. S. P.

Saccharated Ferrous Carbonate

Make 25 Gm.

This is another one of the many carbonate of iron preparations. It is made by the reaction between Ferrous Sulphate and Sodium Bicarbonate. The preparation is quite largely prescribed.

Uses: Chalybeate.

FERRI HYDROXIDUM CUM MAGNESII OXIDI, U. S. P.

Ferric Hydroxide with Magnesium Oxide

Make 1/2 the formula.

Synonym: Ferric Hydrate with Magnesia. Arsenic Antidote

Uses: Antidote for Arsenic.

MAGMA MAGNESIAE, U. S. P.

Magnesia Magma

This preparation, commonly called Milk of Magnesia, is one of the most largely used preparations in the book. The formula

as given in the U. S. P., is not only long and tedious, but is one that will not be followed by the pharmacist in the retail store. Instead, he will buy the preparation from some manufacturer.

The most practical way of making Milk of Magnesia is to buy "Mattison's Magma Magnesia" made by Keasbey and Mattison Company, and mix this with the water according to the directions given on their container. A Milk of Magnesia is made that meets all the requirements of the U. S. P., and is far superior to many of the preparations on the market, to say nothing of the small cost of making.

59. The Prescription.

A prescription may be defined as a written order to the pharmacist for compounding and dispensing a medicine. A prescription is divided into several parts, viz: The first part is the **Superscription**, which is the sign R, the abbreviation for **Recipe.** The second part is the **Inscription**, which is the main body of the prescription and consists of the names of the ingredients. The third part is the **Subscription,** or directions to the dispenser. The fourth part is the **Signature,** or directions to the patient.

In addition to the above it is the physician's duty to give the name and address of the patient, as well as indicate whether adult or child. He should use his full name in signing the prescription, and if he has failed to date the prescription, this should be done by the pharmacist.

Heretofore we have been making preparations of the Pharmacopoeia and National Formulary for which working directions were given. We now come to consider compounds in the treatment of which our own judgment must guide us.

The first twenty prescriptions are incompatible and comments on them are purposely omitted, as it is designed that the student should study the incompatibility in the laboratory.

The majority of the other prescriptions were taken from the files of some of the leading pharmacies and are given just as they were written by the prescriber. They must be compounded, labeled, wrapped and priced.

1.

℞

Strychninae Sulphatis_____gr ss
Potassium Bromidi_____ʒ i
Aqua Dest. q—s_____℥ ii
M. Ft. solutio.
Sig: Teaspoonful every four hours.

2.

℞

Antipyrina
Sodium Salicylatis aa_____ʒ ss
M. Ft. caps. no. x.
Sig: One capsule every two or three hours.

3.

℞

Antipyrina _____gr x
Hydrarg. Chlor. Mite_____gr iv
Misce. Fiat pulvis et div. caps. no. iv.
Sig: One capsule every hour.

4.

℞

Hydrarg. Chlor. Corrosiv._____gr. ss
Spir. Ammonia Arom._____ʒ ii
Tinct. Cinchona Comp. q—s_____℥ ii
Misce.
Sig: Teaspoonful three times a day.

5.

℞

Bismuthi Sub Nit._____gr xx
Kalii Iodidi_____gr xx
Pulv Tragacanth q—s
Aqua q—s_____℥ ii
M. Sig. One teaspoonful three times a day.

6.

℞

Quininae Sulphatis_____gr xv
Tinct. Ferric Chlor._____ʒ i
Spir. Ammon. Arom._____ʒ i
Aqua q—s_____℥ ii
Misce. Fiat solutio.
Sig: One teaspoonful in water before each meal.

7.

℞

Kalii Permanganatis_____gr. xx
Glycerini _____ʒ ss
Aqua q—s_____ʒ iii
Misce. Fiat solutio.
Sig: Apply locally.

8.

℞

Plumbi Acetatis
Zinci Sulphatis aa_____gr. x
Aqua q—s_____ʒ iv
M. Sig: Inject three times a day.

9.

℞

Quinine Sulphate_____gr x
Potassium Acetate_____gr xx
Acid Sulph. D l._____ m v
Aqua q—s_____ʒ i
Misce. Fiat solutio.
Sig: Teaspoonful in water every three hours.

10.

℞

Sodium Boratis
Sodium Bromidi aa_____ʒ ss
Aqua Camphorae_____ʒ ss
Mucilage Acacia q—s_____ʒ ii
M. Sig: One teaspoonful every three hours.

11.

℞

Sodium Salicylatis_____ gr x1
Acidi Citrici_____gr xx
Syrupi Simplicis_____ʒ ss
Aqua q—s_____ʒ ii
M. Ft. solutio.
Sig: Teaspoonful every two hours.

12.

℞

Sodium Boratis_____gr x
Zinci Sulph._____gr ii
Aqua Camph._____℥ ii
Aqua q—s_____ℨ i
Misce. Fiat solutio.
Sig: Eye Drops.

13.

℞

Hydrargyri Bichloridi_____gr i
Liquor Potassii Arsenitis_____℥ ii
Aqua q—s_____ℨ ii
Misce. Fiat solutio.
Sig: Teaspoonful after each meal.

14.

℞

Ammon. Carb._____℥ ii
Syrup Scillae_____ℨ i
Syrup Tolu_____ℨ ii
M. Sig: Teaspoonful for cough.

15.

℞

Liq. Plumbi Subacet._____℥ ss
Mucilage Acacia_____ℨ i
Aqua q—s_____ℨ iv
Misce.
Sig: Apply locally.

16.

℞

Tinct. Iodine_____ gtts xx
Menthol_____ gr viii
Mineral Oil_____ℨ i
Misce. Sig: Use as spray.

17.

℞

Chloralis Hydratis_____℥ ii
Kalii Bromidi_____℥ iss
Elix. Arom._____ℨ i
Misce. Fiat solutio.
Sig: One teaspoonful at bed time.

18.

℞

Potassium Chloratis_____ʒ i
Tinct. Ferric Chlor._____ʒ i
Phenol _____gtts. x
Aqua q—s_____ℨ iv
Misce. Sig: Use as a gargle.

19.

℞

Liquor Potassii Arsen.
Syrup Ferrous Iodidi aa_____ʒ ii
Syrup Tolu q—s_____ℨ ii
M. Sig: Teaspoonful three times a day.

20.

℞

Quinine Sulph._____ʒ ss
Acid Sulphuric Dil._____m xx
Elixir Licorice_____ℨ ii
Misce. Sig: Teaspoonful every two hours.

21.

℞

Infusion Digitalis_____100 Cc
Sig: Teaspoonful every three or four hours.

22.

℞

Saturated Solution of Boric Acid_____ℨ iv
Sig: Use with eye cup.

23.

℞

Hydrarg. Chlor. Mite._____gr iv
Sodii Bicarb._____gr x
Sacch. Lactis_____gr x
M. Ft. pulv. div. chts. no. viii.
Sig: One powder every hour for four doses.

24.

℞

Lead and Opium Wash_____120 Cc.
Sig: Apply on soft cloth.

25.

℞

Black Wash ..... 100 Cc.
Sig: Apply locally.

26.

℞

Aqua Phagedenica Flava ..... 100 Cc.
Sig: Shake well and apply as directed.

27.

℞

Ung. Hydrargyri ..... ℥ i
Dosis no. viii.
Sig: Apply as directed.

28.

℞

Zinci Sulphatis 5.00
Potassii Sulphuret 5.00
Aqua Rosae q—s 125.00
M. Sig: Apply locally.

29.

℞

Quin. Sulph.
Pulv. Doveri aa ..... 3 i
Misce. Div. caps. no. 12.
Sig: One every four hours.

30.

℞

Camphorae ..... gr xxiv
Saponis Pulv. ..... gr. vi
Olei Ricini q—s
Misce. Fiat massa et div. pil. no. viii.
Sig: One pill three times a day.

31.

℞

Tinct. Ferric Chloridi ..... 4 Cc.
Quin. Sulph. ..... 4 Gm
Aqua
Syrupi aa q—s ..... 100 C.c
Misce. Fiat solutio.
Sig: Teaspoonful in water four times a day.

32.

℞

Acidi Tannici_____2.00
Glycerini _____8.00
Misce. Sig: Apply as directed.

33.

℞

Emulsum Olei Terebinthinae_____100 Cc.
Sig: Teaspoonful in water three times a day.

34.

℞

Tinct. Benzoin Comp.
Glycerini aa_____5.00 Cc.
Aqua Rosae q—s_____ 100 Cc.
M. Sig: Apply locally.

35.

℞

Copaiba _____15 Cc.
Liquor Potassii_____4 Cc.
Aqua Cinnamoni q—s_____60 Cc.
Misce. Fiat emulsum.
Sig: Teaspoonful in water four times a day.

36.

℞

Dewees Carminative_____100 Cc.
Sig: Teaspoonful when needed.

37.

℞

Emulsum Olei Morrhauae 50%_____100 Cc.
Sig: Tablespoonful three times a day.

38.

℞

Silver Nitrate_____gr vi
Ft. pilulae no. 6.
Sig: One at night.

39.

℞

Hydrargyri Chlor. Mite_____gr iv
Sodium Bicarb._____gr x
Sacch. Lactis_____gr x
Misce. Fiat pulvis et div. chartula no. iv.
Sig: One powder every hour.

40.

℞

Iodiform
Pulv Opii aa_____gr x
Pulv. Camph._____gr iii
Ol. Theobroma q—s
Misce. Suppos. pro recto no. vi.
Sig: As directed.

41.

℞

Inunction Menthol Comp._____ℨ ss
Dispense in tube.
Sig: Apply by rubbing as directed.

42.

℞

Emulsum Chloroform 5%_____100 Cc.
Sig: Teaspoonful in water.

43.

℞

Sat. Sol. Magnesium Sulphate_____ℨ viii
Sig: Teaspoonful in glass of water on retiring.

44.

℞

Ferri Reducti
Quin. Sulph. aa_____3 ss
Aloin _____gr v
Arsenic
Strychnine Sulph. aa_____gr i
Misce. Fiat massa et div. caps. no. xxx.
Sig: One capsule three times a day after meals.

45.

℞

Menthol ---------- gr iv
Glycerine ---------- ℥ ss
Spir. Odorati ---------- ℥ ss
Mucilage Cydonium q—s ---------- ℥ i'i
Sig: Toilet Lotion.

46.

℞

Magnesium Sulphate ---------- 3 iv
Tinct. Opii ---------- m xl
Acidi Sulph. Arom. ---------- 3 ii
Aqua Menthae Pip. q—s ---------- ℥ iv
Sig: Tablespoonful in water every three hours until relieved.

47.

℞

Thymol ---------- gr xxx
Sacch. Lactis q—s.
M. Cachets no. 2.
Sig: Take one hour apart.

48.

℞

Pulvis Antisepticus ---------- 50 Gm.
Sig: Use as directed.

49.

℞

Sol. Argyrol 20% ---------- 30 Cc.
Sig: Mop throat twice daily.

50.

℞

Phenyl Salicylate
Acacia aa ---------- 3 i
Syrup Tolu ---------- ℥ ss
Aqua q—s ---------- ℥ iii
Misce. Sig: Teaspoonful in water 3 times a day.

51.

℞

Acetic Turpentine Liniment----------200 Cc.
Sig: For stock.

52.

℞

Solution Cocaine 4%----------℥ i
Sig: For office use.

53.

℞

Sulphur Precipitated----------3 i
Beta Napthol----------gr xx
Bals Peru----------3 i
Petrolatum q—s----------℥ i
Misce. Ung.
Sig: Apply locally.

54.

℞

Oleum Santal
Oleum Cubeb aa----------m xx
Misce. Div. soft gelatin caps. no. iv.
Sig: One three times a day.

55.

℞

Acid Salicylic----------1 Gm
Acetic Acid Glacial----------1 Cc.
Collodion ----------20 Cc
M. Ft. solutio.
Sig: Apply as directed for wart.

56.

℞

Sodium Borate---------- 2.00
Sodium Bicarb.---------- 2.00
Phenol Liq.---------- .50
Glycerine ---------- 5.00
Aqua q—s----------120 Cc.
Misce. Fiat solutio.
Sig: Use as a gargle.

57.

℞

Hydrarg. Bichloridi_____gr i
Kalii Iodidi _____3 ss
Syrup Sarsap. Comp._____ℨ ii
Aqua q—s_____ℨ iv
M. Ft. solutio.
Sig: One teaspoonful three times a day.

58.

℞

Ammon. Chloridi_____3 iv
Terpin Hydrate_____3 i
Creosote _____m x
Syrup Tolu_____ℨ i
Aqua q—s_____ℨ iv
M. Sig: Teaspoonful every 2 or 3 hours.

59.

℞

Mentholis.
Camphorae aa_____gr ss
Sodium Bicarbonatis_____gr iii
Glycerini _____3 ii
Liq Alboline q—s_____ℨ ss
M. Sig: For earache.

60.

℞

Kalii Sulphuret.
Zinci Sulphatis aa_____3 iss
Aqua Dest q—s_____ℨ iii
M. Sig: Apply at night.

61.

℞

Glycerine _____3 ss
Prep. Calamine_____gr. xlv
Zinc Oxide_____3 ii
Aqua Calcis_____3 iv
Aqua Dest q—s_____ℨ iii
Misce. Sig: Apply during the day.

62.

℞

Sat. Sol. Potassium Iodide_____30 Cc.
Sig: 10 drops in 1/4 glass of water t. i. d.

63.

℞

Zinc Sulph._____gr. iv
Boric Acid_____gr. xx
Sat. Sol. Menthol q—s_____ʒ iv
M. Sig: Spray nose t. i. d.

64.

℞

Thymol Iodide_____ 2.50
Petrolatum _____20.00
M. Ft. Unguentum.
Sig: Apply locally.

65.

℞

Phenyl Salicylate _____ gr xxx
Ol. Wintergreen_____ʒ ii
M. Div. soft gelatin caps. no. vi.
Sig: One capsule three times a day.

66.

℞

Sat. Sol. Sodium Citrate_____100 Cc.
Sig: Teaspoonful in water every 4 hours.

67.

℞

Mistura Pectoralis (Stokes)_____60 Cc.
Sig: Teaspoonful without water every 2 or 3 hours for cough.

68.

℞

Zinci Sulphatis_____gr ii
Antipyrina _____gr ii
Aqua. Dest._____ʒ i
M. Sig: Drop into eyes every 4 hours.

69.

℞

Tinct. Opii Camphorata ..... ʒ vss
Bismuth Milk q—s ..... ℥ iv
M. Ft. Mistura.
Sig: Teaspoonful in little water t. i. d.

70.

℞

Tinctura Nucis Vomica ..... 4 Cc.
Sol. Ferri Peptomang q—s ..... 120 Cc.
M. Ft. Sol.
Sig: Teaspoonful in little water t. i. d. before meals.

71.

℞

Phenol ..... m xii
Glycerine ..... ʒ ii
M. Sig: Mop ears three times a day.

72.

℞

Phenol ..... gr xxx
Resorcin.
Calamine aa ..... ʒ i
Zinc Oxide ..... ʒ ii
Glycerine ..... ʒ iii
Aqua Rosae q—s ..... ℥ vi
M. Sig: Apply locally to affected parts every 3 hours.

73.

℞

Extratum Belladonnae ..... gr ii
Pulv. Camphorae ..... gr xxx
Quininae Sulphatis ..... gr xxx
Misce. Fiat pulvis et div. caps. no. xii.
Sig: One capsule every 4 hours.

74.

℞

Urotropin ..... ʒ iiss
Sol. Sod. Phos. Comp. ..... ℥ iv
M. Sig: Teaspoonful in little water t. i. d.

75.

℞

Zinc Oxide.
Acid Salicylic aa----------3 i
Beta Naphthol----------gr iv
Ung. Ammon. Hydrg. q—s----------℥ i
M. Ft. Unguent.
Sig: Apply to affected parts.

76.

℞

Dionin 5% solution----------30 Cc.
Sig: Drop into eye t. i. d.

77.

℞

Liq. Potassii Ars.----------3 i
Elix. I, Q et S Phos. q—s----------℥ iv
M. Sig: Teaspoonful in little water 3 times a day after meals.

78.

℞

Copaiba ----------m xl
Oil Cubeb
Oil Santal aa----------m xii
M. Div. elastic capsule no. 6.
Sig: One night and morning.

79.

℞

Glycerite Tannin----------℥ i
Rose Water -- q—s----------℥ vi
M. Sig: Apply to nipples.

80.

℞

Tinct. Opii Camph.----------3 vss
Iodinized Emulsion----------℥ ii
Milk of Bismuth q—s----------℥ iv
M. Sig: One 3 in little water 3 times a day.

81.

℞

Urotropin ----------3 iiss
Elix. Saw Palmetto et Santal Compound q—s-----ʒ iv
M. Sig: Teaspoonful in water every 4 hours.

82.

℞

Aspirin ----------gr xlviii
Camphor Monobrom.----------gr vi
Code'ne Sulph.----------gr ii
M. Caps no xii.
Sig: One capsule every 2 hours.

83.

℞

Solution Carbolized Oil 5%----------60 Cc.
Sig: Apply as directed.

84.

℞

Podophyllin----------gr x
Ex. Belladonna ----------gr iv
Ex. Nux Vomica ----------gr. iv
Pulvis Rhei----------3 i
M. Caps. no. xx.
Sig: One every night for bowels.

85.

℞

Pituritrin Surg Amp.----------No. i
N. Saline q—s ad----------ʒ iss
Misce. Sig: Use as nasal spray q 3 or 4 hours.

86.

℞

Tinct. Nucis Vomica.
F. E. Licorice aa----------3 iv
Creosote (B. W.)----------ʒ iss
Mucilage Acacia q—s
Glycerine ----------ʒ i
Honey ----------ʒ i
Syrup Hypophosphites q—s----------ʒ viii
M. Sig: 3 ii in little water t. i. d.

87.

℞

Sodii Bromidi ---------- ℥ ss
Creosote
Papoid aa ---------- 3 i
Glycerine ---------- ℥ i
Aqua Dest. q—s ad ---------- ℥ vi
M. Sig: Teaspoonful in water after meals.

88.

℞

Ext. Belladonnae
Ext. Hyoscyamus.
Opii Pulv. aa ---------- gr iii
Ext. Hamamelis ---------- gr xlviii
Ichthyolis
Acidi Borici aa ---------- 3 i
Ol. Theobroma q—s.
M. Ft. suppos. no. xii.
Sig: Insert one into vagina at bed time.

89.

℞

Strych. Sul. ---------- gr 1/5
Ac Arsenosi ---------- gr 1/3
Hyd Bichloridi ---------- gr 1/2
Ferri Carb Sac ---------- gr 60
Quin Bis ---------- gr 80
M. Caps. no. xx.
Sig: One 3 times daily.

90.

℞

Bismuth Subnit. ---------- 3 ii
Aromatic Spt. Ammonia ---------- ℥ i
Syrup Simplex ---------- ℥ i
Mistura Creta q—s ad ---------- ℥ ii
M. et Sig: Teaspoonful every 2 or 3 hours to control bowels.

91.

℞

Chloralis Hydratis ---------- 8.
Kali Bromidis ---------- 20.
Aqua Menth Pip q—s ad ---------- 120
M. Sig: Tablespoonful at bed time to produce sleep.

92.

℞

Ipecac Pulv.----------gr ss
Hydr. Chlor. Mit.----------gr ss
Sodii Bicarb.----------gr xv
Cerii Oxalate----------gr xviii
M. Ft. chts. no. vi.
Sig: One powder every 2 hours.

93.

℞

Atropine Sulphate---------- 0.150
Aq. Dest.---------- 15.00
M. Sig: Eye Drops No. 1. Use t. i. d.

94.

℞

Argyrol -- ---------- 1.50
Aq. Dest. ----------15.00
M. Sig: Eye Drops No. 2. Use t. i. d.

95.

℞

Trionalis ____ ----------6.5
M. Ft. chartula no. 5.
Sig: One powder in glassful of hot water every 3 or 4 nights as directed.

96.

℞

Mentholis ----------gr xv
Spir. Anisi----------ʒ i
Lac. Magnesii q—s----------ʒ viii
M. Sig: Dessertspoonful after meals.

97.

℞

Zinc Sulphatis----------gr x
Bismuth Sub. Nit.
Glycerite Tannin.
Hydrastis Fluid aa----------ʒ iv
Muc. Acacia ----------ʒ ii
Aqua q—s ad----------ʒ iv
M. Sig: Use as directed.

98.

℞

Sodii Bicarbonatis ---------- 24.00
Tr. Nucis Vom.---------- 30.00
Cascara Flex. ---------- 30.00
Tr. Gentian Comp.----------120.00
Aqua q—s ad----------240.00
M. Sig: Dessertspoonful in water 3 times a day after meals.

99.

℞

Creosote (Beechwood)----------ʒ ss
Sacch. Pepsin----------ʒ i
Bismuth. Subnit.----------ʒ ii
Mucilage Acacia q—s.
Aqua Menth. Pip. q—s ad----------ʒ iv
M. Sig: ʒ i in water t. i. d.

100.

℞

Iodine Resub.----------gr il
Ol. Turpentine----------m xx
Phenol ----------m v
Ol. Wintergreen----------m ii
Acacia ----------gr x
Syrup Simplex.
Glycerine aa----------ʒ ii
Aqua Dest.----------ʒ iss
Elixir Lactated Pepsin q—s----------ʒ iv
M. S. A.
Sig: Iodine Emulsion.

101

℞

Liquor Formaldehydi----------ʒ iv
Sig: Teaspoonful in quart of warm water as douche.

102.

℞

Ichthyolis----------ʒ ii
Ext. Belladonnae ----------gr. xxiv
Mentholis ----------gr. xii
Lanum ----------ʒ ii
Petrolatum q—s----------ʒ i
Misce. Fiat. Ung.
Sig: Apply freely.

103.

℞

Quininae Sulphatis_____gr. xl
Ext. Belladonnae_____gr. iv
Ext. Hyoseyami.
Ext. Stramonii aa_____gr. v
Misce. Fiat massae et div. pil. no. xl.
Sig: One pill three times a day.

104.

℞

Opii Pulvis
Ipecac Pulvis aa_____gr. xxiv
Zinci Sulphatis.
Resorcinol aa_____gr. xx
Sacch. Lactis_____℥ j
Misce. Fiat pulvis et div. chart. no. 24.
Sig: One powder three to four times daily.

105.

℞

Menthol _____gr. iii
Eucalyptol _____m xx
Elix Terpin Hydrate.
Syr. Hydriodic Acid aa q—s_____℥ iv
Misce. et Sig: Teaspoonful every 3 or 4 hours.

106.

℞

Thymolis _____gr. viii
Formaldehydi _____m viii
Alcoholis _____℥ i
Glycerini _____℥ iv
Aqua q—s_____℥ viii
M. Sig: Use as mouth wash.

107.

℞

Ichthyolis _____℥ ii
Saponis Mollis_____℥ ii
Ol. Cadini_____℥ ii
Lanum _____℥ vi
M. Sig: Apply at night.

108.

℞

Strychnine Sulphatis ----------gr. i
Morphinae Sulphatis----------gr. i
Tinct. Digitalis----------ʒ iv
Aqua Dest. q—s----------ℨ vi
Misce. Fiat solutio.
Sig: Teaspoonful every 3 or 4 hours until the heart acts regularly.

109.

℞

Acetanalide ----------gr. xxx
Arom. Spt. Ammonia----------ʒ iv
Caffeine Citrate----------gr. xvi
Sodii Bromide----------gr. 1xxx
Elix. Aromatic ad----------ℨ ii
M. Sig: One to two teaspoonfuls in water every 2 hours until relieved.

110.

℞

Acetylsalicylic Acid----------gr. xx
Acetphenetidin ----------gr. xii
Caffeine Citrate----------gr. vi
Misce. Div. caps. no. 6.
Sig: One capsule every 2 or 3 hours for headache.

YOUNG'S RULE OF DOSAGE.

To determine the dose for children, divide the age at the nearest birthday by the age plus 12; the result represents the fraction of the adult dose suitable for the child. For example, a child three years old will require

$$\frac{3}{3 + 12} = \frac{1}{5}$$ of the adult dose.

Children bear opiates poorly, while they stand comparatively large doses of cathartics.

LATIN TERMS WITH ABBREVIATIONS USED IN PRESCRIPTION WRITING

aa	Ana	Of Each.
Add	Adde	Add or let it be added.
Ad lib.	Ad libitum	At pleasure.
Aeq	Aequalis	Equal.
Admov.	Admove	Apply.
Agit.	Agitetur	Shake or let be shaken.
Alb.	Albus	White.
Alt. hor.	Alternis horis	Every other hour.
Ant.	Ante	Before.
Aq.	Aqua	Water.
Aq. bull.	Aqua bulliens	Boiling water.
Aq. dest.	Aqua destillata	Distilled water.
Aq. ferv.	Aqua fervens	Hot Water.
Ben.	Bene	Well.
Bib.	Bibe	Drink.
Bis. ind.	Bis indies	Twice a day.
Bol.	Bolus	A large pill.
C.	Cum	With.
Cap.	Capiat	Let him take.
Cap.	Capsula	Capsule.
Chart.	Chartula	A small paper.
Chart. cerat.	Charta Cerata	Waxed paper.
Cib.	Cibus	Food.
Cito. disp.	Cito dispensetur	Dispense quickly.
Cochl.	Cochlear	Spoon.
Coch. ampl.	Cochleare amplum	A table-spoonful.
Cochl, mag.	Cochleare magnum	A table-spoonful.
Cochl. mod.	Cochleare modicum	A dessert-spoonful.
Coch. Parv.	Cochleare parvum	A teaspoonful.
Col.	Cola	Strain.
Collun.	Collunarium	A nose wash.
Collut.	Collutorium	A mouth wash.
Collyr.	Collyrium	An eye wash.
Consp.	Consperge	Dusting.
Contus.	Contuse	Bruised.
Cong.	Congius	Gallon.
Comp.	Compositus	Compound.
D.	Da	Give.
Det.	Detur	Let be given.
De. d. in d.	De die in diem	From day to day.
Dieb. alt.	Diebus alternis	Every other day.
Dim.	Dimidius	One half.
Disp.	Dispensetur	Dispense.
Div.	Divide	Divide.
Dos.	Dosis	Dose.
Emp.	Emplastrum	Plaster.
Empl. lytt.	Emplastrum lyttae	Blister plaster.
Empl. epist.	Emplastrum epispasticum	Blister plaster.
Empl. visic.	Emplastrum vesicans	Blister plaster.

Emuls.	Emulsio	Emulsion.
E. m. p.	Ex modo praescripto	As directed.
Ext.	Extractum	Extract.
F. or Ft.	Fiat	Let there be made.
F. h.	Fiat haustus	Make a draught.
F. m.	Fiat mistura	Make a mixture.
F. s. a.	Fiat secundum artem	Make according to art.
Flav.	Flavus	Yellow.
Garg.	Gargarisma	A gargle.
Gtt.	Gutta	Drop.
Hor. somn.	Hora somnis	At bed time.
Mag.	Magnus	Large.
M.	Misce	Mix.
M. bene.	Misce bene	Mix well.
M. caute.	Misce caute	Mix cautiously.
Mist.	Mistura	Mixture.
Mit.	Mitte	Send.
Mit. tal.	Mitte tales	Send such.
Mod. dict.	Modo dictu	As directed.
Mod. Praescript.	Modo praescripto	In the manner prescb.
Nig.	Nigra	Black.
Non. Rep.	Non repetatur	Do not repeat.
O.	Octarius	Pint.
Omn. hor.	Omni hora	Every hour.
Omn. man.	Omni mane	Every morning.
Omn. noct.	Omni nocte	Every night.
Opt.	Optimus	Best.
Part. aeq.	Partes aequales	Equal parts.
Post. cib.	Post Cibum	After food.
P. r. n.	Pro re nata	When required.
Q. hor.	Quaqua hora	Every hour.
Q. l.	Quantum libet	As much as you please.
Q. s.	Quantum sufficit	A sufficient quantity.
R.	Recipe	Take thou.
Rub.	Rubra	Red.
S. a.	Secundum artem	According to art.
Sem.	Semen	Seed.
Ss.	Semis	Half.
Sig.	Signa	Let it be labeled.
Simp.	Simplex	Simple.
Sing.	Singulorum	Of each.
Sol.	Solutio	Solution.
Spiss.	Spissus	Hard.
Supp.	Suppositorium	Suppository.
Tab.	Tabella	Tablet.
Tal.	Talis	Such.
T. i. d.	Ter in die	Three times a day.
Ter.	Tere	Rub.
Ungt.	Unguentum	Ointment
Ust.	Ustus	Burned.
Ut. dict.	Ut dictum	As directed.

INDEX

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